Henry C. Pearson, F. R. G. S., Founder

Edward Lyman Bill, Publisher

INDIA RUBBER WORLD

William M. Morse, Editor

B. Brittain Wilson, Business Manager

Volume 88 | September 1, 1933 | Number 6

Contents

Articles

		Pages
Rubber Printing Plates		29
Drying Latex	*Joseph Rossman*	31
Rubber Flexing Machine	*G. E. Hopkins*	34
Sources of Waste in Tire Manufacture—III	*Frank Allan Middleton*	35
Safety Device to Interlock Vulcanizer Door		37
Covered Rubber Threads	*George Rice*	38
Rubber, the Life of the Party, in the Guise of Amusing Novelties		39
Improved Dipping Machines		40
We Have Joined the NRA	*Edward Lyman Bill*	41

Departments

	Pages
Editorials	42
What the Rubber Chemists Are Doing	43
New Machines and Appliances	45
Goods and Specialties	47
Rubber Industry in America	48
Financial	50
Obituary	51
New Incorporations	52
Rubber Industry in Europe	53
Far East	55
Patents	57
Machinery, Process, Chemical, General	
Trade Marks	60
Foreign Trade Information	60
New Publications	74
Rubber Bibliography	74
MARKET REVIEWS	
Crude Rubber	61
Compounding Ingredients	65
Cotton and Fabrics	69
Rubber Scrap	72
Reclaimed Rubber	72

Departments

	Pages
STATISTICS	
London Stocks	76
and Liverpool	66
Malaya, British, Exports and Imports	56
Plantation Rubber Crop Returns	60
United States	
and World, of Rubber Imports, Exports, Consumption, and Stocks	66
for May, 1933	76
Imports by Customs Districts	76
for 1933 by Months	63
Production, Rubber Goods	76
Tire	63
Reclaimed Rubber	72
World and United States, of Rubber Imports, Exports, Consumption, and Stocks	66
Rubber Absorption	56
Shipments	76
CLASSIFIED ADVERTISEMENTS	73
ADVERTISERS' INDEX	82

Published monthly by Bill Brothers Publishing Corp., 420 Lexington Ave., New York, N. Y. Other Bill publications are: *Drapery Profits, Premium Practice, Radio Merchant, Rug Profits, Sales Management, Soda Fountain,* and *Tires.* Cable Address: Elbill, New York. Subscription $3.00 per year postpaid in the United States; $4.10 per year postpaid to Canada; $3.50 per year postpaid to all other countries.

Contents Copyright, 1933

R. T. VANDERBILT CO.

INCORPORATED

230 Park Avenue, New York

Up-To-Date?

One of the latest developments or improvements in rubber compounding materials is

Kalite

It is a fatty acid treated calcium carbonate that gives interesting and attractive results when used in tubes, tire and belt frictions, footwear, clothing and many mechanical stocks.

Kalite is even more attractive as the price of rubber advances.

The users are increasing. Are you acquainted with KALITE?

INDIA RUBBER WORLD

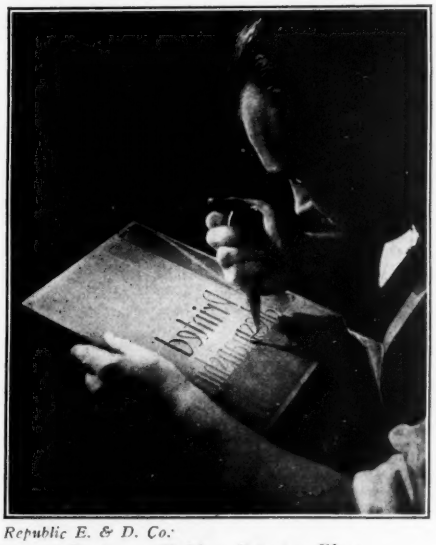
Published at 420 Lexington Avenue, New York, N. Y.

Volume 88 **New York, September 1, 1933** **Number 6**

Rubber Printing Plates

Printing Advantages — Forms of Engravers' Gum — Composition and Use — Cut and Molded Plates

THE increasing use of rubber in the printing art is a matter of importance to both printer and rubber manufacturer; to the former because of the economy and the technical excellence that attend its use for plate printing especially in colors, and to the latter as a new trade opportunity of large possibilities. The potential market is indicated by the fact that in this country there are approximately 60,000 printers to whom the matter of utilizing rubber printing plates in their trade will be of compelling interest when they realize its advantages. In the experience of a practical printer familiar with the use of rubber plates their advantages are: economy of cost; resiliency of the material favoring clear impressions on uneven surfaces; better coverage of solid color from rubber than from metal plates; less make-ready necessary on the press; and the possibility of readjusting the register by the use of a sharp knife on the plates. These points apply particularly to commercial color work for posters, booklets, covers, advertising inserts, blotters, and general commercial work.



Republic E. & D. Co.

Cutting a Rubber Printing Plate

Engravers' Gum

In the rubber trade the stocks used in making rubber printing plates are known as engravers' gum. Each stock is compounded and otherwise specially prepared to meet the requirements of its function in producing a cut or molded plate. The usual forms of rubber produced for printing plate work are: (1) type gum; (2) matrix gum; (3) plate gum; (4) zinc backed gum; and (5) plate mounting gum. These meet the needs of plate maker and printer for all printing purposes.

While oilproof quality is foremost there are others of vital importance for satisfactory service in rubber plate printing. These are toughness to resist abrasive wear, sharp molding, smooth cutting, and a resilience adapted to give good impressions whatever the surface printed. Also the material should age well and should not develop pitting of the surface. The latter condition shows white specks visible as "pin holes" scattered over the impression.

In compounding, stiffness is not synonymous with toughness. While sufficient inert fillers such as asbestine will give stiffness and a certain resistance to oil, reenforcing ingredients, for example: clay, zinc oxide, and carbon black, particularly the latter, serve best to give toughness or wear resisting quality. The close combination of carbon black with rubber makes it the best material known for enhancing the physical qualities of rubber, including resistance to oil. Dark rubber with a bloomed surface is preferred to white rubber by some engravers for the practical reason that the bloomed surface can be marked upon to give a fine white line which can be easily followed by the cutting tool. In the case of white rubber the bloom, if present, does not give a visible mark against the white stock. A surface of white rubber receives preference over black in engraving plates of hairline registration for color separation in high class letter-press

Schilling Press

Typical Rubber Printing Plate

work. In such instances the design is outlined in black on the white surface by an impression from an etched photolithographic plate. The printing areas are easily designated by color as a guide for the engraver who thus can execute his work more readily with the required accuracy for fine printing results.

Cut Plates

Mention has been made that printing plates are made by cutting and by molding processes. The method and the rubber chosen depend on the sort of material and nature of the printing desired.

Ordinary engravers' gum is selected for type printing on burlap, cloth, corrugated container stock, and uneven surfaces generally. This stock is supplied in rolls calendered in plies on heavy duck about 42 inches wide. The material as built on the duck base consists of 2 plies of cheap, black stock, each about 1/16-inch thick, united by 1 ply of sheeting insertion. Between the upper ply of this backing rubber and the rubber face stock is a second single insertion of sheeting. The face rubber is about 1/8-inch thick. This construction, when plated smooth and press cured, is suitable for engraving-type work in the following manner:

Designs and characters drawn on the surface are formed for printing by cutting through the top ply of rubber on a bevel to the first cloth insertion at which level the spaces between the characters are pulled away leaving the printing surfaces 1/8-inch high. Still greater relief may be given to a word or line of type by cutting around it down to the lower cloth insertion and pulling away another layer of the backing rubber to avoid ink "pick-up" when printing. The printing plate or strip thus produced is fastened upon the cylinder of the press ready for service.

A second type of cut work is executed upon rubber vulcanized to a zinc back which comes in sizes 32 by 36 inches or 32 by 42 inches. In this instance the engraving rubber is about 1/32-inch thick backed with 3 or 4 plies of sheeting. The printing rubber has a different texture and is harder cured than type rubber for bag printing because zinc backed plates for printing on paper are cut either by hand knife or engravers' hand push tool, both of which methods are pictured. All knife cuts are made through the surface rubber at a bevel to leave a sharp edge on the type or characters and to buttress the face against spreading.

Republic E. & D. Co.

Rubber Type Cutting

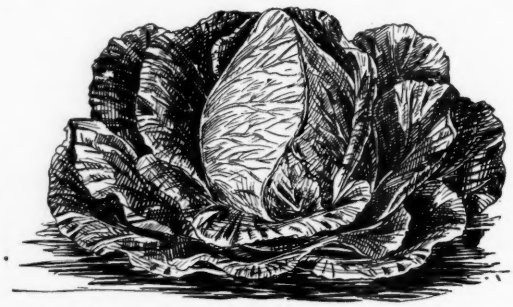
Molded Plates

Molded printing plates are made by vulcanizing uncured sheet gum in a matrix or mold taken from type, etched plate, or engraved rubber plate. Rubber is commonly used as matrix in which case it is of fairly hard curing quality and in its uncured state is sufficiently plastic to mold well into all the fine details of the matter to be reproduced. By a recently introduced patented English method, molded type plates are made from a special paper or flong matrix. In this particular the process resembles stereotyping and is highly successful.

In another molded method the plate gum is backed with fine wire gauze as a support against spreading when cured under pressure in a hard rubber matrix.

Plate Mounting Gum

All molded plates are mounted for printing by backing them with very adhesive thin sheet gum run on holland. It is applied to the back of the cured printing plate cleaned with naphtha. When the protecting holland is removed the exposed tacky surface will make a secure adhesion of the plate against a printing drum, wood block, or other supporting surface.



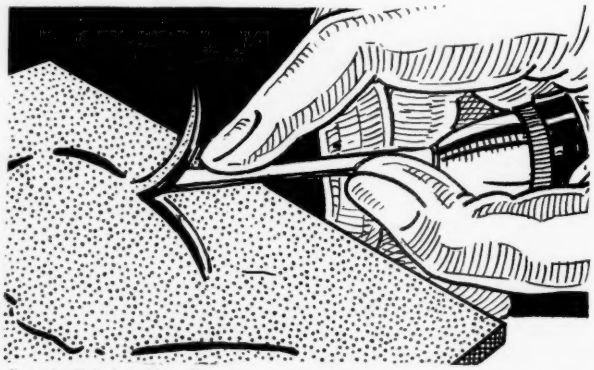
Sam'l Cupples Envelope Co.

Paramat Process

Printing Inks

Printing inks are of 3 general classes: namely, ordinary oil base inks, water base, and aniline. The latter 2 varieties are not injurious to rubber as ordinarily compounded, but to resist the softening effects of oil and cleaning fluids used to wash up type forms rubber must be spe-

(*Continued on page* 33)



Parazin Printing Plate Co.

Engraving a Rubber Printing Plate with a Push Tool

Drying Latex[1]

Joseph Rossman, Ph.D.

THE method of obtaining crude rubber from latex, as practiced in Brazil, consists of collecting the latex from the trees and coagulating it by dipping a paddle into the latex and holding it over the smoke of a fire made of urucuri nuts, which give off fumes having astringent properties, thereby coagulating the latex. The paddle is repeatedly and alternately dipped and held over the fire so that a mass of coagulated rubber is built up on it in layer formation.

On plantations in the Far East the process of coagulation consists of collecting the latex and immediately coagulating it by adding acetic acid or some similar chemical to the latex and stirring it until a coagulum is formed.

Another process is to permit the latex to stand in a warm atmosphere, which effects what is called natural coagulation. After the coagulum is formed, whether by the first or the second process, it is taken out of the residual fluid and washed, creped, or sheeted, then dried or smoked, when it is ready to be packed for shipment.

A number of processes and apparatus have also been devised for coagulating latex by supplying it in a thin film to a rotating drum, coagulating this film by the use of smoke or smoke in conjunction with other coagulating material, and as each film of latex is coagulated, superposing another film thereon and continuing the process until a relatively thick mass of coagulated rubber has collected on the drum, and then cutting the rubber away.

In these processes employing smoke or acetic acid coagulation, the rubber obtained contains some of the smoke products or acetic acid, one or more chemical constituents which are undesirable and, to some extent, injurious. In the processes just mentioned it is impossible to obtain all the solid contents of the latex consisting of rubber globules, resins, and proteins, both soluble and insoluble in water. These solid contents are important in the subsequent manipulation and vulcanization of the rubber obtained and in improving its aging qualities.

It has been found very advantageous to retain all the soluble constituents of the latex in the crude rubber, and processes and apparatus have been devised, such as those disclosed in patents to Hopkinson, No. 1,423,525, July 25, 1922, and Bradley and Coffin, No. 1,428,526, Sept. 12, 1922, for obtaining directly and rapidly from the latex a crude rubber containing all the soluble constituents, by spraying the latex into a heated drying medium and compacting the dried particles.

The product, white in color, is an unvulcanized spongy mass of rubber consisting of cohering particles. It may be readily broken apart with the fingers. As collected from the chamber, the gravimetric density has been found to be 0.30 to 0.40 at 70° F. This spongy product is then placed in an hydraulic press and compacted. The air cavities disappear, the particles cohering and assuming the general characteristics of crude rubber. This rubber differs from ordinary crude rubber in that under the microscope instead of the somewhat striated structure of crude rubber, a globular structure appears. It also differs from ordinary crude in that it contains a higher percentage of protein matter. One of the chief differences in sprayed rubber, when compared with ordinary crude, appears upon vulcanization. When the material is milled with sulphur, an increase in tensile strength and resistance to abrasion of approximately 20% occurs. When vulcanizing and other compounding ingredients are mixed with latex, in the presence of saponin, and then sprayed, the resistance to abrasion and tensile strength upon comparison with ordinary crude is found to be even more greatly improved than where the vulcanizing and other compounding ingredients are introduced by milling.

The presence of the increased quantity of protein in the sprayed rubber aids in accelerating vulcanization. Various types of vulcanizing ingredients such as sulphur, the nitro compounds, sulphur compounds, such as hydrogen sulphide and sulphur dioxide, may be utilized in connection with latex, being applied preferably before spraying so that the homogeneity of the mass may be improved and milling avoided although they may be added at any desired time. Other compounding ingredients such as carbon black, gas black, and zinc oxide may also be added before spraying.

The following abstracts of United States patents chiefly cover methods and apparatus for obtaining rubber from latex by film or spray drying methods.

1. Mellinger and Markley, 1,008,607, Nov. 14, 1911. The process consists in intermittently rotating a metallic drum heated on the interior, applying a coating of latex to the drum, and in allowing each coating to dry before the next is applied, until a sheet of crude rubber of desired thickness is obtained.

2. Wickham, 1,126,327, Jan. 26, 1915. A rotating cylinder in a casing exposes successive films of latex to the action of smoke. The casing is divided into 2 compartments, to one of which smoke is admitted, while the other is free from smoke. A latex delivery conduit discharges latex on the rotating drum. The delivery end of the conduit moves across the face of the drum to distribute the latex on it.

3. Krause, 1,166,225, Dec. 28, 1915. Latex is dispersed in a horizontal sheet of spray in the top of a closed chamber while hot gases are projected vertically from the bottom to dry the latex.

4. Krause, 1,213,887, Jan. 30, 1917. Latex is sprayed vertically from the bottom of a closed chamber, while heated gases are introduced in a sinuous path, by nozzles arranged tangentially to the walls of the chamber.

5. Slocum, 1,306,838, June 17, 1919. The process consists in placing latex into a vacuum chamber and before actual ebullition commences raising the temperature of the latex to at least 80 to 85° C. It has been found that the nitrogenous and similar material in the latex coagulates substantially entirely at this temperature. The chamber being evacuated, drying of the latex under vacuum is continued until the resulting mass contains a desired content of moisture. It has been found that rubber with 18 to 20% moisture content will not

[1] Received from author May 26, 1932

"weep," that is, permit a collection of moisture on the surface, and yet contains sufficient moisture, when shipped, to prevent oxidation en route.

The following are some of the other methods which may be carried out. (a) Prior to its introduction into the vacuum drier, the uncoagulated latex may be heated in an external vessel until insolubilization of proteins and similar substances occurs. (b) The latex may be first coagulated, and this coagulum heated to 80 to 85° C. until the proteins and similar substances are rendered insoluble. This operation may be performed prior to the entry of the coagulum into the vacuum drier or in the vacuum chamber itself before actual drying takes place. (c) The latex after being suitably heated to 80 to 85° C. may be coagulated, and this coagulum dried in vacuum. (d) The uncoagulated latex may be treated with suitable enzymes or suitable coagulating ferments such as rennet which will insolubilize, its protein content, and the latex so treated, or its coagulum dried under any convenient vacuum. (e) The uncoagulated latex may be treated with chemicals which precipitate the proteins, and this latex or its coagulum subjected to evaporation in vacuum. (f) Antiseptics may be added to the coagulated or uncoagulated latex either before or after the insolubilization of the protein content by any of the methods mentioned above, and the evaporation of the latex may be proceeded with before or after coagulation. As a specific example of the use of antiseptic materials, 0.2% beta-naphthol is added to the uncoagulated latex before its introduction into the vacuum chamber.

6. Davidson, 1,388,453, Aug. 23, 1921. When raw rubber is freshly coagulated from the latex, it ordinarily contains a very large proportion of water, which is removed by passing the coagulated rubber between rollers and subjecting it to gradually increasing pressure by bringing the rollers closer together each time it goes through between them, until it attains a sheetlike form.

In this operation, however, it is difficult to prevent bubbles of air, or gas, and water from getting locked within the rubber; and the more resilient the quality of the rubber under treatment, the harder it is to burst these bubbles to let the contained air or gas and water escape; consequently the rollers are rotated at differential speeds to disintegrate the rubber and tear the bubbles open, as is done in the preparation of "crepe."

The process according to this invention consists in subjecting the rubber in the form of a layer to the perforating effects of numerous sharply pointed pins forced through it from the one surface to the other. An apparatus for this work is described.

7. Hopkinson, 1,423,525, July 25, 1922. Ammonia preserved latex is sprayed in a chamber where it meets a stream of air heated to 200° F. The product is a mass of raw rubber consisting of cohering particles.

8. Hopkinson, 1,423,526, July 25, 1922. This patent covers the product obtained by the preceding patent.

9. Bradley and Coffin, 1,428,526, Sept. 12, 1922. The process for drying latex consists in feeding latex on to the surface of a rotating disk, discharging it from the edge of the disk as a series of particles, and bringing a heated gas into contact with the particles.

10. Davidson, 1,446,737, Feb. 27, 1923. Coagulated rubber is retained in a strip of strongly woven cotton fabric and kneaded between 3 rollers in a triangular formation. The rubber is air dried for several days.

11. Schidrowitz and Stutchbury, 1,530,164, Mar. 17, 1925. Vulcanized latex prepared as described in patent 1,443,149[2] is spray dried. The finished product is dry vulcanized rubber, ready for treatment by any well-known process such as compressing, sheeting, molding, forcing or extruding, etc., operations which cannot be carried out with ordinary vulcanized rubber. The apparatus used for spray drying is of the type described in patents 1,166,225 or 1,213,887 given above.

12. Coffin, 1,534,030, Apr. 21, 1925. Latex is spray dried by an apparatus similar to the one described in patent 1,428,526. The dried latex is deposited on sectional platforms, which can be removed at intervals without stopping the spray drying.

13. Hopkinson, 1,540,885, June 9, 1925. This method consists in directing opposed streams of latex under high pressure against each other, releasing the pressure at the point of impact, thereby to divide finely the latex, and drying it in a chamber containing a heated gas.

14. Hopkinson, 1,542,939, June 23, 1925. Latex is continuously filmed on a woven wire drum. A blast of air is projected through the wire, which atomizes the film into a drying chamber.

15. Hopkinson, 1,550,319, Aug. 18, 1925. A spray desiccation process produces crude rubber from latex, which consists in subjecting the latex during spraying to enough heat to make the dried rubber dark.

16. Bradley and Coffin, 1,558,586, Oct. 27, 1925. A sprayer for latex comprises a smooth, unobstructed disk, means for rotating it and means for discharging the liquid centrally of the disk comprising a tubular wall terminating closely adjacent the disk and a surrounding adjustable wall concentric therewith and co-acting with the disk to form an adjustable outlet.

17. Coffin, 1,558,593, Oct. 27, 1925. A sprayer for latex comprises a disk, means for rotating it, an annular orifice for delivering latex centrally of the disk, and successive overflow means for evenly supplying latex to the orifice.

18. Hopkinson, 1,575,165, Mar. 2, 1926. An apparatus is described for removing suspended rubber particles in the heated gases which leave the spray drying chamber. The gases are passed through an electric field between 2 moving belts. The rubber is deposited on the belts, from which it is scraped off.

19. Hopkinson, 1,582,604, Apr. 27, 1926. The process of drying latex comprises supplying a thin film of latex to the outer curved surface of an internally heated rotary cylinder by causing the cylinder to rotate continuously through a small supply of latex in a small pan beneath the cylinder, maintaining a constant level of latex in the pan by supplying a uniform flow of latex thereto at a rate equal to its removal therefrom by the cylinder, and continuously removing the dried latex from the cylinder.

20. Reel, 1,612,780, Dec. 28, 1926. A method for producing pure rubber comprises spray drying, collecting the dried particles in an uncompact spongy form, and washing the rubber in this form with water to remove the water-soluble non-rubber constituents, then treating the compact mass to the action of water and papain for rendering the protein soluble, and treating the uncompact mass to acetone to remove the resin.

21. Hopkinson, 1,690,114, Nov. 6, 1928. The dry rubber produced by spray drying is collected in special trays in the bottom of the chambers. The trays contain partitions forming individual receptacles, in which the rubber particles are collected and compacted into blocks.

22. Yeandle, 1,695,676, Dec. 18, 1928. Rubber is obtained from the guayule shrub by disintegrating the plant, subjecting it to steam under pressure at 10 to 100 pounds per square inch to cause penetration of the fibers with steam. This treatment may continue for a relatively short time, for example, from 10 seconds to one minute,

[2] See INDIA RUBBER WORLD, May 1, 1932, p. 44.

and may be followed by a shorter period of from about 3 to 5 seconds, during which the pressure is increased to, say, 800 pounds per square inch. The pressure is then suddenly released, and the material is discharged from the pressure chamber by the force of the expansion. The materials are thereby thoroughly disintegrated; the cell walls are broken down, and the rubber exposed. The material may be delivered in that condition to storage receptacles, from which it may be withdrawn and treated either with a rubber solvent or by grinding to effect agglomeration of the rubber particles.

23. Hopkinson, 1,750,753, Mar. 18, 1930. A drying apparatus consists of a circular chamber provided with a spraying apparatus centrally disposed near the top, variable means for supplying a distributed and downwardly directed current of drying gases at the top of the chamber, with means for preventing direct access of the drying gases to the side wall and sprayer, and widely distributed exhaust means adjacent the bottom of the chamber connected with collecting means providing a circuitous path for the exhaust gases.

24. Wescott, 1,762,494, June 10, 1930. Hemoglobin is added to latex, which is then dried by spraying.

25. Gibbons, 1,807,031, May 26, 1931. Reissue 18,691, Dec. 13, 1932. The process of modifying the properties of rubber from latex comprises heating normal latex above 212° F. for 2 to 3 hours without substantial change in its water content, removing part of its water content to form a concentrated latex, and subsequently removing the balance of the water by spray drying. The latex during the heat treatment may be subjected to the action of substances adapted to combine with or decompose proteins, as for instance, caustic alkalies; or treated with substances capable of dissolving and forming compounds with free or combined resin acids, alkalies, alkali carbonates, or ammonia; or it may be subjected to the action of substances adapted to combine with the sugars present, as for example derivatives of hydroxylamines or hydrazines.

26. Gibbons, 1,834,148, Dec. 1, 1931. The process comprises incorporating with the latex enough of an easily hydrolyzable compound such as ammonium phosphates, ammonium oxalate, and ammonium citrate, to give the water extract of the dried latex a pH of 6 or less, and manufacturing rubber from the latex by evaporation methods.

As an example of the application of the invention, there were added to 3,546 pounds of fresh latex, 89 pounds of a 20% ammonia solution and 110 pounds of a solution of the commercial salt consisting substantially of primary ammonium phosphate, this solution being equivalent to a 10% solution of ordinary phosphoric acid and equivalent to approximately 1% phosphoric acid on the weight of the rubber. This latex was then spray dried. It was found that, when a sample of the dried rubber was boiled with water, the water extract gave a pH of 5. Any suitable evaporation method may be used for converting the latex into rubber.

27. McGavack, 1,840,243, Jan. 5, 1932. The properties of rubber both in its raw and vulcanized states are improved by incorporating in latex an ammonium soap of an acid selected from the group consisting of oleic, undecylenic, lauric, palmitic, margaric, and stearic, and an ammonium salt of a strong water soluble acid capable of decomposing ammonium soaps and proteinates, and drying to solid form.

Example 1: To latex preserved with ½% ammonia and having a concentration of about 35% is added 1% of lauric acid in the form of ammonium laurate, and ¼% of ammonium chloride, these latter figures being based on 100 parts of solids in the latex. The latex is then spray dried, and the resulting rubber has a quick breakdown and a high abrasion and flexing resistance when vulcanized.

Example 2: To a similar latex is added 1% of lauric acid as ammonium laurate and then ½% of phosphoric acid as secondary ammonium phosphate. The latex is then spray dried, and the resulting crude rubber has a quick breakdown, good calendering, and extruding properties; and the vulcanized rubber has a good abrasion and flexing resistance.

Example 3: To a similar latex 1% of lauric acid as ammonium laurate is added and then 1% of monochloracetic acid as the ammonium salt. The latex is spray dried, and the resulting crude rubber has excellent breakdown and milling properties and, when vulcanized, a good abrasion and flexing resistance.

28. Gibbons, 1,864,060, June 21, 1932. This process for treating rubber latex comprises adding to the latex a substance selected from the group consisting of ammonium chloride, bromide, fluoride, and nitrate, in quantity sufficient to give a rubber the water extract of which has a pH less than approximately 7, and spray drying the latex.

29. MacLachlan, 1,869,703, Aug. 2, 1932. The method of drying latex comprises spraying the latex into an upwardly swirling current of a heated air, effecting a continuous expansion of the ascending air and causing the deposition of the dried sprayed particles at a level below the uppermost points of travel of the air and laterally with respect to the upwardly swirling current.

30. McGavack, 1,872,161, Aug. 16, 1932. Latex as received from the tree is treated with 0.2-part of formaldehyde and allowed to stand for about 24 hours, and then 0.5-part ammonia is added. The latex is spray dried, producing a rubber having its proteins tanned or reacted upon by formaldehyde and which rubber is less absorptive to water. If desired suitable compounding and curing agents may be added to the latex before drying.

31. Twiss and Murphy, 1,898,604, Feb. 21, 1933. An apparatus for drying liquid rubber latex comprises a vessel, means for supporting the latter with freedom for universal tilting movement about a point within the vessel, and means for successively tilting the vessel in different vertical planes in combination with means for supplying a current of air to the vessel.

Rubber Printing Plates

(*Continued from page* 30)

cially compounded. This can be done so successfully that runs of 500,000 impressions or more are possible from rubber plates on burlap where register and spread of plate are no disadvantage. However on high class letterpress register work as high as 175,000 impressions have been obtained.

Color printing in water inks gives the nearest approach to duplicating the production of a water color subject as handled by an artist. For this purpose no method excels rubber plate printing in the hands of an artist-printer working with a comprehensive system of color overlapping as a guide.

The printing trade offers a large field for the use of rubber in printing plates because of their economy, durability, and excellent technical possibilities. Some of their important advantages have been mentioned; others will doubtless appear to printers as they gain familiarity with rubber plates in color and other commercial work.

Rubber Flexing Machine

G. E. Hopkins[1]

ONE of the pieces of special apparatus developed for research in the carpet industry is a flexing machine for determining the effect of repeated flexing below the point of ultimate elongation of rubber test specimens. It consists essentially of a crank operated rocker arm, at the free end of which is a clamp for holding the upper end of the rubber specimen; the lower end is secured by a similar clamp fastened to the base of the machine. Several adjustable features permit of varying the flexing action between fairly wide limits.

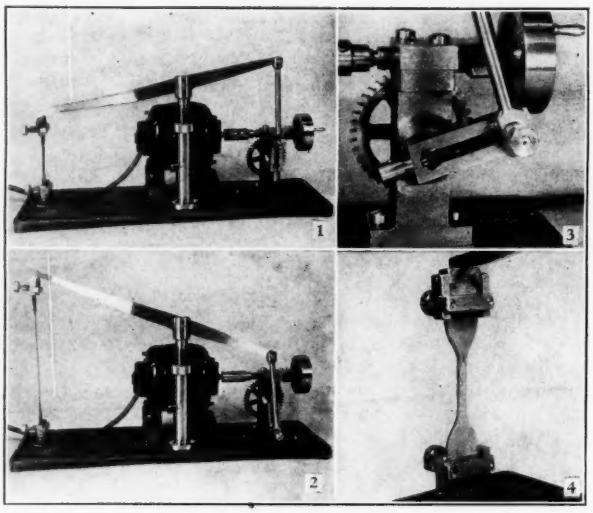


Fig. 1. Lower Point of Adjustment; Fig. 2. Upper Point of Adjustment; Fig. 3. Adjustable Crank Radius; Fig. 4. Clamps for Test Specimen

Figures 1 and 2 show the machine at the 2 extreme points for the particular adjustment. The crank shaft is driven through a 40 to 1 worm reduction by a 2,400 r.p.m. motor so that the specimen is flexed 60 times a minute. The crank radius is adjustable, as shown in Figure 3, from zero to 1 5/8 inches, which permits of a maximum flexing at the sample end of the rocker arm of 4.8 inches. The rocker arm is pivoted, as shown, to the upright pillar, which provides for a vertical screw adjustment.

The specially designed clamps, shown in Figure 4, eliminate difficulties experienced with other type clamps due to the sample slipping out at high tensions or to the clamps not holding securely at zero tension.

In operation the crank radius is adjusted to give the desired elongation and with the specimen in place and the upper clamp at the lowest point of travel, the height of the rocker arm pivot is adjusted so that the slack is taken up, but also so there is zero tension on the sample. A standard adjustment is made for each of the several classes of rubber compounds to be tested so that in testing several samples of any type compound the results will be comparable.

The sample may be flexed until it ruptures, and the number of cycles noted; or it may be flexed a set number of times, and the permanent stretch and loss of tensile strength determined.

The method of testing consists essentially of repeatedly flexing the rubber sample to a prescribed elongation and determining the number of flexes required to cause failure. The procedure follows.

Compounds are classified according to their purpose. Standard values for elongation of flexing are prescribed for each class of compound. Otherwise the test procedure is the same in all cases.

The dumbbell shaped rubber samples are prepared as directed in Bureau of Standards Technical Paper No. 5, the gage being held within the specified limits of 0.045 to 0.050 inches thick.

The samples are either conditioned or aged and conditioned as directed in Bureau of Standards Technical Paper No. 5 to determine the fatigue before and after aging, respectively.

The flexing machine is adjusted to produce the prescribed elongation in the following manner. The elongation prescribed will be either 100, 200, or 400%. The adjustments necessary to give these elongations have been previously determined and are given in the following table as turns from the zero position of the screw collar which raises or lowers the rocker arm fulcrum.

Elongation %	Turns of Screw Collar
100	2.27
200	6.46
400	15.27

The screw collar is graduated in 1/10 turns, and the setting is estimated to hundredths. The screw collar is turned to the prescribed setting, and, being seated properly on the upright pillar, the pillar is locked by tightening the set-screw. The metal template, which is the same length (4.30 inches) as the rubber test samples, is gripped in the lower clamp, taking care that it rests properly on the bottom of the clamp. The screw adjustment of the crank radius is then turned so that when the upper clamp is at the lowest point of travel, the metal template, already gripped in the lower clamp, is in its proper position with respect to the upper clamp. This setting is locked by tightening the nut that is on the end of the crank pin.

The machine is thus adjusted to accommodate the rubber specimens and produce the prescribed elongation. These are mounted as shown in Figure 4. The adjustment should be such that with the upper clamp at its lowest point of travel there are no tension on the sample and also no slack.

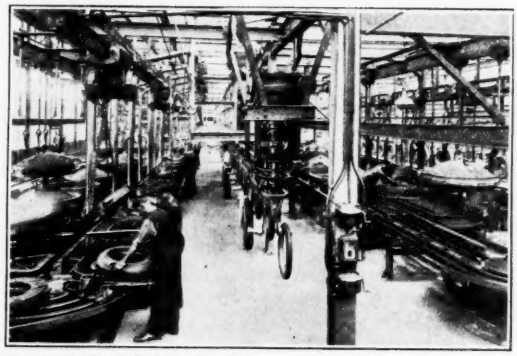
The machine is started, and the sample flexed until rupture occurs. The exact time required to cause failure is determined with a stop-watch, and the number of

(*Continued on page* 38)

[1] Technical Director, Bigelow-Sanford Carpet Co., Inc., Thompsonville, Conn.

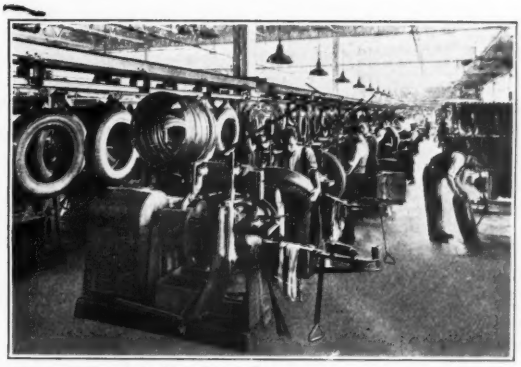
Sources of Waste in Tire Manufacture—III

Frank Allan Middleton



Firestone Tire & Rubber Co., Ltd.

Tire Curing Department



Firestone Tire & Rubber Co., Ltd.

Tire Assembly Room

THE last article[1] in this series concluded with reference to tubing air bags and inner tubes, which was incidental to the discussion of difficulties associated with the forcing machine. A complete survey of the waste and mistakes which can develop in the manufacture of these products, particularly in subsequent processes, will be delayed for the time being, while casing construction is adverted to, to preserve continuity in treatment of the subject.

Fabric Cutting

After calendering comes cutting the fabric into strips required for plies, breaker-strips, bead cover, and chafer and friction fabrics. Cutting cord fabric at the customary bias angles of between 34½° and 45° involves wastage at the beginning and end of every roll and at places where a change in angle is necessary because of the "angle ends" so produced. These triangular pieces of fabric, however, are often profitably used in one of 2 ways. In one case, as was mentioned in a previous article[1], a special "work-away" casing may be designed, in which these fabric ends may be incorporated, together with other tire parts of faulty manufacture, such as plies of wrong gage, bias angle, or width, or calendered with the wrong rubber stock. This utilization of waste is by no means 100% because such a tire will only be a clearance line, although the characteristics, especially cure, of the components employed in it must be kept within reasonable bounds. The return for this type of waste can be increased, however, if a repair department is instituted, the purpose of which is to assemble into plies the angle ends, miscuts, and strips left over from the band building of plies for core built casings. As long as the number of splices per ply is kept below a certain figure, say 4, such plies can quite safely be incorporated in the second-line tires.

The most difficult problem for the bias cutter operator is to secure accuracy in cut width. It will reduce the possibilities of waste, therefore, if the Production Scheduling Department will order this machine to make runs of as great a length as possible at the same cutting width. The maintenance of the desired bias angle, while being a matter demanding extreme accuracy (a tolerance of about 1½% is all that is usually allowed), involves less difficulty, for it merely entails correct adjustment and setting of the machine.

In the comparatively small plant producing a varied range of sizes it usually happens that changes in ply width are required with much greater frequency than alterations in bias angle, and the production schedule will demand skillful arranging if delays and miscut fabric are to be avoided. It is not difficult to discover when stock cutting is inaccurate, for the situation will be immediately reflected in the returns for scrap and trimmings of the tire and band-ply assembly shops; and if classification of scrap by tire size and style is practiced, as depicted, it is possible to see at a glance where difficulties are being experienced.

It will assist the preservation of accurate ply gages if the fabric specification for calendering indicates the gage required after recovery of the gum: i.e., the gage at which the ply is to be assembled. If the gage to be processed at the calender is specified, no latitude is permitted the operator of this machine in allowing for variations in stock condition; but by being informed of the gage desired after recovery, his experience of the factory's stocks will enable him to provide for the increases in gage which always occur. Expansion is considerable, and for some classes of mixings, e.g., those loaded with zinc oxide may attain 6% of the fabric gage.

[1] INDIA RUBBER WORLD, August 1, 1933, pp. 29-30, 35.

Bead Manufacture

The methods by which manufacturers insulate and build up straight-side wire beads are varied, but all give opportunities for waste of wire, gum, and fabric. Perhaps the system which accords most closely with the aim for continuity of production and contiguity of processes is that employing a tubing machine for covering with rubber each ply, consisting of 4 or 6 strands of creel wire, and constructing the bead by winding the bonded strands upon a chuck until the requisite number of plies, plus an overlap of some 15 inches, has been built up.

Bare patches in the insulation often necessitate scrapping long lengths of wire. They have their origin at the tubing machine and may be traced to poorness of the wire surface, such as the presence of rust, dirt, grease, etc., insufficient heating of the wire prior to insulation, or the presence of grit or air pockets in the rubber stock, usually a high-reclaim mix and therefore susceptible to air bubbles because of its softness. So fine is the gage of the insulation, of the order of 0.02-inch, that the smallest particle of foreign matter will lodge in the die aperture and prevent adhesion of rubber to the wire. Occurring in the middle of a bead-length, this condition will involve scrapping a great deal of wire, every inch of which represents either 4 or 6 inches of single-strand wire.

Although bead assembly itself presents few avenues for error, it is not rare for an operator to build up an incorrect number of plies, apply friction strips in a faulty manner, or exhibit carelessness in other ways. The assembly process is a rapid series of operations which tend to become automatic and mechanical with practice, and mistakes can arise.

Assembling Casings

The system of assembling casings on the core type of machine has not been entirely superseded by drum-building, for heavy duty and large bus tires are still constructed by the first method. The essential preliminary to this operation is the splicing of plies. These are usually assembled in pairs, and their complement of insertion-strip incorporated at the "band-ply" stage of assembly.

It is the duty of those engaged in this operation to check the cut calendered fabric against specification, then to splice the cut lengths together, tear off the length required for the ply, and process the necessary strips on to the fabric by means of rubber squeezing rollers. Finally, 2 plies are assembled together with the aid of the rollers. Fabric scrap at this stage, which has already been referred to in connection with "work-away" tires, results from the necessity of limiting the number of splices in each ply, consequent upon the disparity between the width of the fabric roll and ply length.

Both the length and the width of plies will vary considerably throughout the same tire as the joint result of increasing periphery and cross-section toward the crown and the position of the beads in relation to the plies. It is essential, therefore, that all band-plies be clearly and indelibly marked according to their position in the casing: e.g., "1—2" for the inside band, "3—4" for the next, and so on. It is helpful to use a system of storage by tire size and ply number to insure that tire builders take the correct bands.

Of great importance in considering material scrap in tire manufacture as a whole, is the waste accruing from trimming the plies of core built casings. This item has probably been accorded as much study as any problem that has ever confronted the tire manufacturer; and the extent to which this waste is occurring is watched very carefully. Apart from involving expense, tire trims are significant in that they furnish a likely index of the quality of the casings being produced; for, assuming that the ply widths have been previously checked and found correct, excessive trim indicates that the ply is being subjected to too great a tension, and that the casing is being thereby weakened. Entire absence of trim, on the other hand, is not desirable because it may signify that the ply has not been stitched down or expanded properly, with the result that wrinkles may be present. If the total weight of a builder's trims is not excessive in relation to the number of tires assembled, yet the trims vary widely in point of individual width, it denotes that there is insufficient care in centralizing plies, with the possible concomitant of inequalities in tension from one side to the other of the tire.

It is not enough, therefore, merely to know the extent to which this waste is arising; its exact nature should also be the subject of close and frequent inspection.

Faults common to both core and drum methods of assembly relate to selecting wrong treads, beads, plies, and breaker and cushion strips by the assembler, and the application of these parts out of correct alinement.

It may be noted here that all splices should be made with as small an overlap as is compatible with sufficient adhesion, which in the case of cord fabric may be conveniently taken as the width of 4 cords.

All concerned in these assembly stages should watch for signs of set-up, bloomed, or poor surfaced stock and should on no account allow such stock to become part of a tire. Attention to storage and handling arrangements should insure the prevention of these undesirable conditions, however, for the first is usually due to the action of direct sunlight; the second to exposing the stock to the air for long periods (covering up all partly made-up components, and rerolling all fabric and gum contained in liners during shut-downs, are precautions most likely to require enforcement); while the third includes the presence of grease, dirt, and moisture.

Utilizing Fabric Waste

It is convenient at this point to deal briefly with the disposal of rubberized fabric waste.

Most manufacturers grind their scrap on a grooved-roll mill, refine it, and incorporate it with a low grade mixing of some sort. Such a stock can be used as a bead covering or filling strip, or, as long as the proportion of fabric waste is kept fairly low, a bead "toe;" while a further use for it is as a pad for providing a seating for air bag valves. The manufacture of various other rubber products may provide further outlets for ground fabric waste, in the plant not restricted solely to tire manufacture.

It is essential to classify this scrap according to the accelerators employed in the skim stocks, for scorching and overcuring have frequently resulted from intermixing scrap of different curing characteristics.

Tire Curing

If waste arising during the initial and the intermediate stages of manufacture be regarded as so much departure from the complete utilization of the resources, both material and human, of a manufacturing organization, that which attends the vulcanizing process may be looked upon as their most nearly complete non-utilization. The extreme importance, therefore, of insuring that perfect accuracy is observed throughout the cycle of manipulative operations, and close regulation of conditions maintained during cure, is readily manifest.

The preparation of the casing for molding involves a number of operations which have a great influence upon the final condition and value of the product. Not less than 30 minutes before entering the mold, the inside ply of the "green" casing is painted with a solution of rubber so that when a solution in which such lubricants as mica, soapstone, and thermatomic carbon black are dispersed is subsequently applied, a deposit of the powder is retained by the first ply after cure. The air bag, previously washed in a dispersion of similar lubricants and injected with a solution, containing, usually, glycerine, for retarding the formation of cracks, is then inserted; next the tire cover is dusted with a lubricating powder, such as cornstarch, which has the property of being absorbed by rubber during vulcanization, without leaving a bloom to impair the finish of the product. The usual cleaning, polishing, and doping of the mold are also essential features, of course.

Without thorough supervision of these preliminary operations, therefore, impairment of the finished tire is possible in a variety of ways: bad molding may result from the inability to flow and fill out the mold during cure; external blemishes may be sustained. The life of the inner tube may be shortened for lack of lubrication between itself and the casing; while the air bag may sustain injury during cure or extraction from the cured casing, or its useful life shortened through the agency of the factors which accelerate "aging."

Since the lubricating powders are only dispersed in the solution with which the air bag and tire interior are dressed, constant agitation of the solution is necessary. It is advisable, consequently, to provide the storage tanks for this solution with agitators (the paddle type of solution mixer is quite suitable) so that it is not left to the tire painter to stir the solution before each application, a duty which is not difficult to overlook.

Obviously many mistakes are possible in molding: tires may be laid in wrong molds; beads and treads may be pinched through careless adjustment of shaping rings or mold lids, etc. The persons responsible for carelessness of this sort can be traced by assigning a number to each layer; a metal strip, on which this number is stamped, is then inserted alongside the serial stamp before molding so that every casing bears the identity mark of its molder.

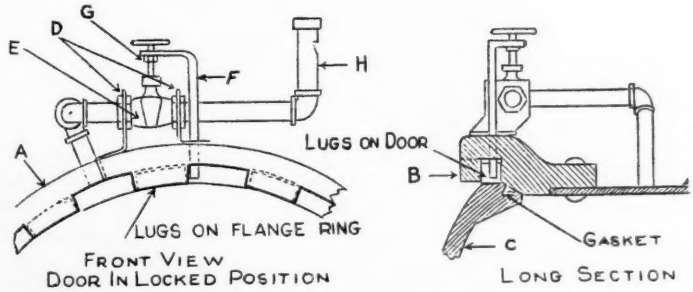
Defective tires will also result from light beads, treads, sidewalls, and rim cushions; and such accidents as burst air bags, leaks in the steam supply for vulcanization, or the air or water supply for air bag inflation, will sometimes spoil not only individual tires but the contents of a whole autoclave. The light places referred to may be due, besides those circumstances already suggested, to a variety of causes. If they persist in a particular size of tire after the molding operations have been checked, it will be necessary to examine the workmanship of such uncured tires; and if no faults in construction can be found, and a tire constructed under expert supervision exhibits the same faults after cure, it will be necessary to investigate the specification to which the tire was made and to subject the mold to a careful checking of dimensions. If the mold is according to specification and the tire carcass proves correct, a slight revision of tread or sidewall gage may achieve the desired result. A light rim cushion may be corrected by inserting a filling strip at the junction of sidewall and bead; a cheap stock will be satisfactory; even mixings containing ground fabric scrap in limited amounts have been used.

In any case small defects to tread or sidewall can be repaired; and it is only when the lettering is affected that a second quality casing results from this cause. Where beads are concerned, it is more serious. Bad molding or the incorporation of a bead of wrong size or faulty construction, resulting in the bead forcing its way up into the sidewall, oblige scrapping.

The scrapping of finished casings may result from any faulty operation contributing to its manufacture. Open splices, wrinkled plies, overweight treads, overcuring and undercuring, due to poor mixing, inaccurate compounding, or ill-regulated curing conditions, are all liable to cause defects and should be most carefully inspected. Unfortunately some of the conditions can not always be detected by a superficial inspection, and only when tires that have failed in service are returned for examination, is the source of trouble revealed.

Safety Device to Interlock Vulcanizer Door

W. L. SCHNEIDER, safety engineer for The B. F. Goodrich Co. and member at large of the Executive Committee of the Rubber Section, National Safety Council, submitted the safety kink shown in the accompanying illustration which he describes as follows:



Rubber Section—News Letter, N. S. C.

A. Vulcanizer Shell; B. Flange Ring; C. Door; D. Brackets for Valve; E. Gate Valve; F. Locking Pin; G. Set Collar on Valve Stem; H. Whistle Alarm to Operate on Less Than One Pound Pressure

This device provides, in addition to the tell-tale, a locked valve at all times when pressure is within or applied to the vessel, and the vessel must be locked in order to admit steam. Should the operator attempt to apply the pressure, he will be unable to do so by reason of the fact that the valve will not close, neither will steam be admitted until the door is fully locked.

When the door is unlocked, it cannot be opened without emitting steam through the whistle which will blow as long as there is pressure within the vessel. This whistling acts as a warning, and the operator must first release the pressure through the regular blow-down and safety tell-tale; otherwise the whistle will blow continuously.

The device is very effective, and it insures against the premature opening of the door as well as failure fully to lock the door.

Covered Rubber Threads

George Rice

ROUNDED, square cut, and various other shaped rubber threads have been covered with fine silk and cotton yarn for a long time. With the advent of rayon and similar yarns of the artificial silk group, the application of elastic threads in foundation garments, dress goods, window draperies, and hat fabrics has been greatly increased. A certain degree of elasticity is in wool, mohair, Angora rabbit wool, cotton, linen, worm silk, and ramie. Artificial silks will stretch when wet, but lack the facilities to regain themselves like real silk when the stressing ceases. Consequently the steadily increasing use of rayon has encouraged the employment of elastic threads in proportion of one to 10 or one to 20 of the non-elastic threads in an astonishing number of different fabrics in which rayon constitutes the main part.

Fig. 1. The Rubber Thread Is Woven at Intervals with the Silk or Cotton Threads

Fig. 2. When the Tension Is Released, the Rubber Thread Contracts, Causing the Other Threads to Crinkle

The success of the elastic threads in giving resiliency to a woven or knitted texture makes it possible to utilize these yarn covered rubber threads in woolens as well as in fabrics of the synthetic group. The introduction of crinkle fabrics, in which certain threads contract and make other threads crimp and buckle, has had something to do with the popularity of regular goods in which a crepe or a crimpy effect is produced. The crinkle silks, satins, and woolens are fashionable, and this fact helps feature the textiles in which the rough crepe condition is produced by elastic threads.

The small, close fitting hats worn by women and made of yarn covered rubber threads conform to the shape of the head better than hats made of cloth. The shoe trade also consumes much rubber cloth having a 2-way stretch.

A rubber thread covered with rayon or other threads possesses greater resiliency than solid rayon or any kind of thread carded, drawn, and spun with an all-textile fiber construction. The covering of fine rubber threads makes them look like the all-textile threads and at the same time gives the cloth structure an expanding and contracting property which cannot be obtained in any other way. Custom tailors and dressmakers make closer fits of garments by using rubber cloth which will take up wrinkles where the fit is loose and stretch where the tension is abnormal.

The desired result is obtained in the warping of the yarns in the mill, where one rubber thread is dressed parallel with 10, 15, 20, or so of rayon, silk, wool, cotton, or mohair. This construction gives the warp the elastic quality longitudinally, which may be the only direction a stretch will be needed in the finished fabric. If 2-way stretch is required, then a separate shuttle would be used to take the covered rubber thread through the loom shed once to every 10, 15, or 20 all-textile threads, the same as in the warp, which runs longitudinally.

Figure 1 is an enlarged sectional view of a woven texture in which the yarn covered rubber thread is represented in solid black, and the silk, rayon, cotton, or wool thread in outline. The 2 kinds of threads interlace as in ordinary textiles, with the tension upon each equal in the loom. But when the woven fabric is removed from the loom, the contraction of the elastic thread asserts itself and puts a crimp in the textile thread, somewhat as shown in Figure 2. The former thread retains its original status; while the latter crinkles into loops to accommodate the surplus of yarn produced by the shrinking action. Therefore, when the thread system is laid out at the rate of one elastic thread to 10 or more textile threads, the desired rough crepe effect becomes developed as soon as the woven fabric is released from tension in the direction of the yarn covered rubber threads.

The old type of rubber thread has been displaced by threads as fine and close meshing as any of the textile threads in the fabric, regardless of the fact that the elastic thread consists of a rubber core covered with extremely fine and compactly spiraled yarns. Manufacturers of sporting garments, gloves, tailored suits, dress goods, and foundation garments are constantly finding new and interesting uses for the one-way or the 2-way stretch fabrics.

Rubber Flexing Machine

(*Continued from page* 34)

flexes determined accordingly. The machine operates at 60 flexes a minute so that the time in seconds is equal to the number of flexes. In event the sample is not ruptured at the end of 3,600 flexes, it is removed, and the value reported as greater than 3,600.

The prescribed values for the elongation of flexing are for gums 400%, and for rubber compounds 200%. Results are reported in each case as the average of 4 tests, showing the number of flexes at the specified percentage of elongation to cause failure.

Unskilled Labor Figures

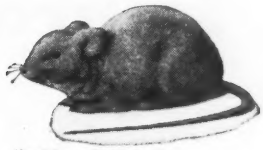
The National Industrial Conference Board's analysis of average weekly earnings and average hours of unskilled male labor in the rubber industry were as follows in 1926 and in May and June, 1933.

Average weekly earnings in 1926, $26.88; May, 1933, $14.86; June, 1933, $19.81. Average hours actually worked per week in 1926, 48.8; May, 1933, 33.3; June, 1933, 42.7.

Rubber, the Life of the Party

In the Guise of Amusing Novelties

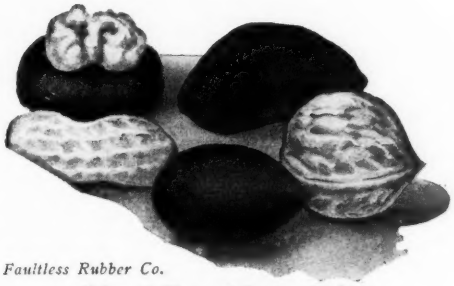
Miller Rubber Products Co.
Hot Dog!



Faultless Rubber Co.
Rubber Rodent

"APRIL FOOL!" and you've bitten a chunk of rubber instead of an appetizing doughnut or delicious chocolate. (Curtain while the air clears of blue smoke, etc. from irate you.)

April Fool? Are we being a bit premature? Not at all! There is no closed season on fun, although maybe open season for practical jokers would be a boon. But, then, what would the rubber industry do, for the funster in his moments turns shekels into the coffers of rubber manufacturers?



Faultless Rubber Co.
Selected Nuts of Sponge Rubber

As example, consider the following products which part "a fool and his money"—even as you and I—all in good, clean fun.

If anyone with a reputation for such things offers you a pretzel with your 3.2, beware, for a sponge rubber one looks so natural; even the salt is there. Do you crave a hot dog? Well, make sure it's beef, not rubber. The most inviting doughnut covered with tempting powdered sugar may prove to be only sponge rubber. So too a luscious Georgia peach or a banana. The former even has a patented wool-covered finish further to deceive your victim.

Who likes hard boiled eggs dyed in fantastic hues? See a mottled sponge rubber reproduction among the originals, and you'll never be able to tell the difference.

Sponge rubber chocolates also offer giggles galore. These novelties consist of oval chocolate, cherry center, caramel, nut top, and chocolate drop. They are packed in De Luxe candy boxes that closely simulate the real thing.

Nuts for the nuts. (Terrible!) Yet there's more truth than poetry in that remark, if you're talking about sponge rubber nuts and—But let's not get personal. The rubber brand comes in the following varieties: peanut, pecan, English walnut, brazil nut, and chocolate nut combination.

Packed in a neat carton, they will fool even the most wary.

How often have those well-known comedians amused you with their trick cigars of finest—sponge rubber. Your friends can become your stooges (unwittingly) in going for such smokes, for they look just like the genuine article. The outside of each is finished to resemble perfectly the wrapper of a good Havana cigar. Each is banded with regular bands and packed 10 in a box, with medallions and seals.

Perhaps it is fun to be fooled, but it is more fun to know, especially when some one is passing around cigarettes, but not Turkish or Virginia. These cigarettes are fashioned of rubber sponge and sport a white rubber coating in excellent imitation of the true product. The rubber sponge at each end is a realistic reproduction of tobacco filler. The cigarettes come 5 in an innocent looking box or 5 banded in a wrapper.

"Look out! There's a mouse!"

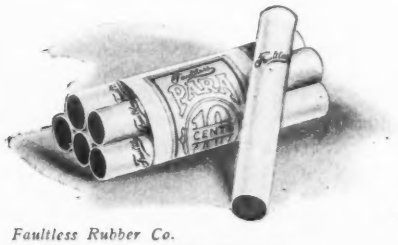
And no matter how modern or emancipated the female of the species is, she'll probably jump sky-high at the warning. What she'll do after discovering your deception is another story.

But you can't blame her either her righteous wrath or womanly fear, for these sponge rubber mice with patented wool finish will startle even Tabby. One mouse comes in gray with a rubber tail. Another model is white with rubber tail and pink eyes.

There are 2 sides to every story, even about novelties designed for a laugh. Many of these sponge rubber products, besides serving as playthings for the kiddies, can also lead a useful life. For window displays, for instance, when the beaming sun can wreak havoc with an attractive layout of perishable commodities, rubber candy, fruit, nuts, or smokes will prove just as good looking and far more serviceable and less expensive than the original.

Miller Rubber Products Co.
Spongy Pretzel

Faultless Rubber Co.
De Luxe Box of Candy



Faultless Rubber Co.
Para Cigarettes

Improved Dipping Machines[1]

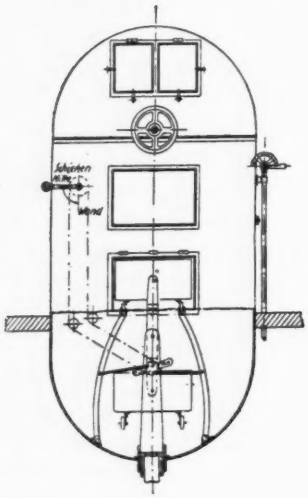


Fig. 1

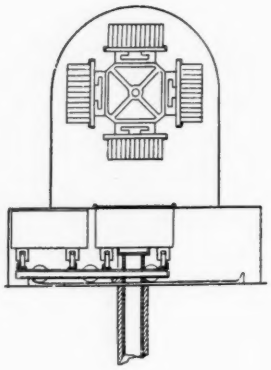


Fig. 2

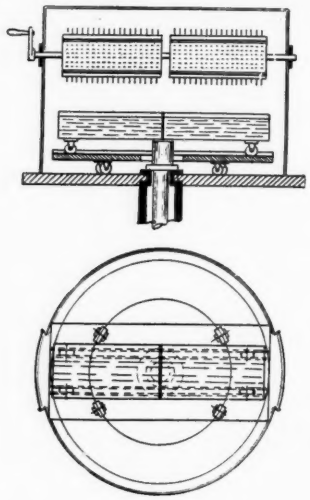


Fig. 3

FUNDAMENTAL improvements in dipping machine construction have been introduced in Europe. The advantages gained include: (a) the possibility of working all sizes of molds in one standard apparatus; (b) the simplicity of serving it due to the general arrangement permitting a good total view; (c) avoiding danger by using non-sparking materials; (d) keeping the inner spaces free from dirt by oil and dust; (e) unusual increase of the recovery effect of the solvent used.

The machines made heretofore can be used neither for latex dipping, in which it is necessary to dip alternately into different solutions, nor for the equally up-to-date hot curing process which demands combination of solutions. In the latter the powerful effect of accelerators is of decisive importance because, when a solution is used that is several days old, the goods can easily be spoiled. On the other hand adding a new solution to the remainder left after dipping, frequently does not help. To prevent these unfavorable conditions, therefore, it is preferable to prepare 2 different solutions, one with addition of vulcanizing agent and the other with accelerators. In this form the solutions keep practically indefinitely; however they require alternate dipping of the goods in both mixings.

The same applies with regard to the colored articles as rubber caps, bathing shoes, rubber toys, etc.; here, too, alternate dipping in 2 or more different solutions is necessary, and to this end either the dipping tank or the molds can be made exchangeable. For new installations, changing the dipping tank is recommended as simpler or more suitable, according to the following methods: (a) by hanging the dipping tank in a revolving cross-head (see Figure 1); (b) by lateral movement of the tank on a sliding platform (see Figure 2); or (c) by dividing the tank and the mold mounting on the mold cross-head in halves while the tanks can be turned 180 degrees on a revolving platform (see Figure 3).

The construction according to (b) can also be carried out in old installations wherever the dipping machines have been set, leaving small spaces between them. Plan c, because it requires a comparatively large amount of space, would be less frequently employed.

Changing the molds is especially suitable where old machines standing close together are to be rebuilt. In this case a new housing is required for 2 machines taken together; while the 2 mold cross-pieces are placed on swinging arms by means of which they can be swung around 180 degrees after each dipping and thus brought from one dipping tank over another. This construction, which in itself is not very simple, has the special advantage that it requires no removal of the installation of the solution containers and their raising devices, the drives, etc., as is the case in construction (b), where changes in raising platform and tank must be made.

[1] *Kautschuk*, June, 1933, p. 92.

Balanced Molding

IT IS not feasible to mold bathing caps or shoes by using a press to distribute the compound around the mold; therefore the mold must be divided longitudinally, and sheeted compound be carefully fitted in it. When rubber softens during vulcanization, it acts like a fluid under the heavy molding pressure which ordinarily displaces the core. This difficulty has been overcome by a mold split in a plane parallel to the main axis of the core and adapted to produce 2 similar articles with a single core serving for both articles arranged with their openings opposite each other.[1] When similar amounts of stock are used, the direct pressures developed are equal and opposite; therefore there is no tendency to displace the core.

[1] United States Patent No. 1,899,907, Feb. 28, 1933.

We have joined the

100% cooperation in making the National Industrial Recovery Act a success means paying for the gasoline as well as riding on the bandwagon.

In common with thousands of other business enterprises, we are taking our part in the greatest experiment of industrial planning the world has ever seen.

If the present advance in business is to be sustained and increased, if this fall is to mark the turning point in the period of industrial depression, it requires all of the business men of America ungrudgingly to meet the full requirements of the President's policy.

"What benefits one, benefits all!"

EDWARD LYMAN BILL,
Publisher

EDITORIALS

Rubber Industry Codes Pending

MUCH progress has been made during the past month by the Rubber Manufacturers' Committees in the preparation of NRA codes for the various divisions of the rubber industry. The code proposed by the tire division that was submitted to Administrator Johnson on July 29 has failed to be approved and will undoubtedly be withdrawn and rewritten by the tire committee. The stumbling block in the way of approval of the proposed code seems to be the desire of rubber manufacturers to retain the open shop policy. The other rubber industry codes are still in a state of formulation or are in the hands of the Code Analysis Division at Washington.

When President Roosevelt announced his reemployment agreement or Blanket Code which is designed to increase at once wages and employment, pending the adoption of the general codes, practically the whole rubber industry and allied concerns promptly signed the agreement and placed its provisions in operation with as little delay as possible. Thus the industry gives its undivided support to the President's program and is entitled to display the Blue Eagle emblem of the NRA and its slogan, "We Do Our Part."

New Tires for Used Cars

THE activity in the production and shipments of pneumatic tires, which began early in March of this year, continued through the summer months until the middle of August, when the larger factories began to reduce production schedules.

This increase in tire output was quite unusual for the summer season, when plants are usually shut down for repairs or inventory taking. But the persistent demand for tire replacements from dealers has been the direct cause of this upward swing in tire production and would apparently indicate that a greater amount of tire mileage is being used by American motorists. Statistics of car production and car registration, however, reveal that the real cause of this recent tire activity is the increased use of used cars.

In 1921 the production of automobiles in the United States was 1,616,119 and in 1932, 1,370,678 cars. Over 245,000 more cars were produced in 1921 than in 1932.

In 1921 automobile registrations were 10,467,715 cars, and in 1932, 24,136,879, an increase of over 13,600,000 cars since 1921, which for the greater part comprises used cars going into service.

Give a Man Work

THE problem of equitably sharing work in rubber factory operations with justice to the various employes has seriously perplexed rubber executives during the months just passed. Paul W. Litchfield, Goodyear's president, in *Executives Service Bulletin* speaks for the workman as follows:

"It is my firm conviction that every man is entitled to a chance to work. His natural state requires that he be engaged in producing, transporting, or selling the things his fellow men need. Idleness is a social disease, demoralizing and degenerating in its effect upon our social body.

"Greatest of all the problems of surplus faced by humanity during the past few years was that huge and growing surplus of labor. As men were thrown into idleness, their ability to purchase and consume the products of other men was nullified. Thus unemployment bred more unemployment and we were hurrying dizzily down a spiral whose bottom represented complete and total collapse of our entire social and economic system.

"There were employers who sought to take advantage of the labor surplus. This minority complicated the problem for their more social-minded competitors because, in squeezing labor unmercifully, they hammered down the costs of their products and made it difficult for their competitors to meet them in the marts of trade on an even footing.

"Had we all seen our broad, social duty—had we all recognized the inexorable fact that we are largely interdependent and that we cannot maintain a desirable state of health individually without extending due consideration to that broad social and economic structure from which I believe that we must all draw our well-being, we could have avoided the lower levels of the depression reached last March.

"We are entering whole-heartedly into the spirit of the New Deal, determined to contribute our best efforts to the success of a plan which is broadly conceived as a means of improving civilization."

THE NEW PARTNERSHIP OF GOVERNMENT AND BUSINESS will succeed to the extent that individual companies and industrial groups give to it enlightened, unqualified cooperation. The trade association has been specifically designated as the agency through which this cooperation will be effected. This is the challenge—a challenge which holds many opportunities and many serious responsibilities. *Roscoe C. Edlund.*

What the Rubber Chemists Are Doing

A. C. S. Rubber Division Activities

THE Eighty-sixth Meeting of the American Chemical Society will be held in Chicago, Ill., September 10 to 15, 1933. Through the courtesy of the Chemical Foundation its exhibition space will be used as headquarters for chemists throughout the week of the meeting. Abstracts of the Rubber Division papers follow.

Development of Structures in Uncured Rubber on Standing. Information was obtained about the structures formed in rubber and rubber-pigment systems by studying the plasticity changes which occurred when these systems were aged at various temperatures from 5° to 150° C. for periods up to 2 years in the case of samples aged at the lower temperatures. Milled crude rubbers may show 3 changes during storage at 70° C. or above: first, an initial softening, possibly due to the effects of peroxides formed in the rubber during the milling; then a slow hardening; and finally, if aged long enough, another softening due to thermal oxidation. The initial softening does not occur with hot-milled pale crepe or with sprayed latex, which do not evolve detectable amounts of peroxides after milling.

Pigments such as clay, zinc oxide, lampblack, thermatomic carbon, and magnesium carbonate may greatly affect the initial plasticity of the rubber, but they have only a small effect on the change of plasticity with time of aging. Solubility tests confirm the existence of structures in many aged pigmented stocks, and they show that these structures develop more rapidly at high temperatures. When rubber-gas black stocks, aged for several days, are put into benzol, the samples retain their shape for several years. W. F. Busse and J. M. Davies, B. F. Goodrich Co.

Rubber Plasticity Control. An empirical relation between y-value and time of milling found for gum rubber on a cold laboratory mill furnishes a convenient method of analysis of the Williams plastometer indices. The relation between these indices was investigated with respect to amount and method of breakdown of the rubber and to the degree of "set up" of typical factory stocks. No marked advantage of the "recovery" measurement over the usual "y-value" measurement, from a practical standpoint, was discovered. Results obtained with an extrusion plastometer operating at high rates of shear indicate that this type of plastometer offers a better criterion of plasticity of rubber than does the compression instrument. J. H. Dillon.

Some Service Tests on Tires and Tubes in Which the Rubber Was Exclusively Guayule. Tires and tubes were made in which the rubber used was exclusively guayule. These were of the 4.50/21 size and were tested in Florida over a period of 2 years. These tires failed at mileages between 8,500 and 10,500 because of tread wear. The inner tubes gave satisfactory service throughout the duration of the test. The problems connected with the development and processing of the compounds are discussed, and the formulas given. J. M. Doering.

Thermal Properties of Rubber Compounds. I. Thermal Conductivity of Rubber and Rubber Compounding Materials. This paper is the first of a series on the behavior of rubber compounds with respect to thermal conductivity, thermal resistance, and heat generation. A flat plate calorimeter using electric current as the source of heat and the guard ring principle was designed for measuring the thermal conductance of rubber compounds. With few exceptions the results check those obtained by Williams using steam as the source of heat, and the heat conductivity of a rubber compound was found to be a straight-line function of the volume percentage of pigment and of rubber. This work was extended to cover the effect of the variables possible in zinc oxide and other generally used rubber pigments on thermal conductivity. C. E. Barnett, New Jersey Zinc Co.

Testing Reclaimed Rubber. The merits of tests on reclaim-sulphur cured compounds versus tests of typical compounds containing the reclaims show that the former are of little value, except in the case of specific gravity. A testing procedure is recommended for the consumer of reclaimed rubber, which stresses processing and physical tests on cured compounds from a factory test run using a specific and suitable recipe. Henry F. Palmer, Xylos Rubber Co.

Shearing Plastometer for Unvulcanized Rubber. A plastometer for unvulcanized rubber is described in which the sample is sheared between the surfaces of a rotating disk and a stationary chamber surrounding the disk. To prevent slippage the rubber is kept under a confining pressure, and the surfaces which shear it are roughened. The stator chamber is made in 2 sections which close together under the action of a powerful lever system, and in doing so they automatically cut and form the sample of rubber. A complete plasticity measurement including heating the sample can be made in 3 minutes. The measurement obtained, called the shearing viscosity, is proportional to the mean absolute viscosity of the sample. Melvin Mooney.

Comparison of Oxygen-Bomb, Geer Oven, and Air-Bomb Aging Tests. A large number of comparisons in gum stocks were made between experimental and commercial materials in oxygen-bomb, Geer oven, and air-bomb aging tests. Without exception the results showed that the Geer oven and air-bomb age tests gave similar results, and that antioxidants which gave satisfactory results in the air-bomb aging tests likewise gave satisfactory results in Geer oven aging test. E. W. Booth, Rubber Service Laboratories Co.

Effect of Oxygen on the Plasticization of Rubber. The mastication of rubber on a laboratory mill in various concentrations of oxygen has been studied. At low oxygen concentration the plasticization is slow and limited in extent. Higher concentrations of oxygen than found in air produce but little additional effect. A rubber-sulphur mix compounded in an inert atmosphere showed a faster rate of cure than a similar mix compounded in air, but no increase in maximum tensile strength. W. K. Lewis, Lombard Squires, and A. J. Sysko.

Effect of Cure on the Physical Properties of a High Sulphur-Rubber Mix. The tensile strength, elongation, density, and combined sulphur of a 50 sulphur-100 rubber mix have been determined over the complete range of cure at 142° C. The variation in the stress-strain relations as a function of the state of cure has been presented. The marked pitting and surface imperfections sometimes observed during hard rubber cures are ascribed to the abrupt increase in density of the mix when the intermediate rubber stage is reached. Robert Nussbaum, Jr., Lombard Squires, and C. C. Smith.

Mechanism of the Vulcanization of Rubber with Sulphur. The assumption

that the chemical addition of sulphur to rubber involves the formation of an intermediate accelerator-sulphur complex is shown to correlate quantitatively the data on the kinetics of vulcanization. Sulphur addition, accordingly, consists of 2 consecutive reactions $A+S=AS$, and $AS+R=RS+A$ and the rate of vulcanization, as measured by the formation of combined sulphur, is determined by the rate of the slower reaction. The conditions under which either reaction is controlling and the corresponding, integrated reaction rate equation have been worked out. The effect of the exothermic character of sulphur addition on the kinetics of high sulphur cures is discussed. W. K. Lewis, Lombard Squires, and Robert Nussbaum, Jr.

Effect of Temperature on the Tensile Properties of Vulcanized Rubber. The tensile properties and tear resistance of a large number of commercial inner tubes, before and after aging by different methods, are studied at 0°, 25°, and 100° C.; and wide variations in the behavior of the tubes at these temperatures are shown. A number of uncured bus-truck tube stocks are also studied from the point of view of their capacity to withstand high temperatures.

Testing rubber at 100° C. as compared with room temperature shows how some compounds collapse at 100° C., while others have tensile properties equal to, or better than, those at 25°. Testing artificially aged specimens at 100° C., as well as at 25° C., shows that the high temperature test may reveal conditions of deterioration and overcure not noticeable in the 25° tests. The compounding and curing conditions that lead to high tensile properties at 100° C., as well as those which cause inferior quality, are discussed. A. A. Somerville and W. F. Russell, R. T. Vanderbilt Co., Inc.

Natural and Synthetic Rubber. XII. Reversible Vulcanization by Organo-Metallic Derivatives. Slightly degraded sol rubber is vulcanized by means of the Grignard reagent to a material similar in properties to soft cured rubber (undercured) and having a tensile strength above 900 pounds per square inch. The vulcanizate is reverted by water or dilute acids to a material having the same physical properties as the original rubber, and the vulcanization and reversion may be repeated with this material. Reversible vulcanizations are also obtained with zinc alkyls and EtZnI. A sol rubber, after special treatment to eliminate oxidation products, is not vulcanizable by organometallic compounds. The vulcanization is attributed to the formation of metal complexes with oxidized rubber molecules, and the devulcanization to the destruction of these complexes. The theory that the formation of polar groups on the rubber molecule is essential to produce vulcanization is thus given considerable support. T. Midgley, Jr., A. L. Henne, and A. F. Shepard, Ohio State University.

Temperature Coefficient of Vulcanization. Temperature coefficients are determined for stocks accelerated with (a) mercaptobenzothiazole, (b) mercaptobenzothiazole with diphenyl guanidine, (c) mercaptobenzothiazole with diphenyl guanidine neutral succinate, (d) dibenzothiazyl disulphide, (e) dibenzothiazyl disulphide with zinc dimethyl dithiocarbamate. Cures are made at intervals from 223° to 306° F., and also in a constant-temperature oven in a bolted mold at 194° and 172° F. The values obtained from modulus and combined sulphur data are found to be (a) 1.41 and 1.54, (b) 1.41 and 1.54, (c) 1.43 and 1.43, (d) 1.50 and 1.52, (e) 1.48 and 1.51, respectively (for 10° F. intervals). R. E. Morris.

Further Studies on the Iodine Value of Rubber and Gutta Hydrocarbon as Determined by Iodine Chloride. The reactivity of various halogens toward rubber and gutta hydrocarbons has been studied quantitatively. The behavior of both hydrocarbons toward halogens is very similar. The order of reactivity of the halogens follows: chlorine, bromine, iodine chloride, iodine bromide, and iodine. The results show that gutta possesses a greater initial reactivity toward iodine than does rubber. Data and detailed procedure are presented which offer further refinements to the iodine chloride method for the determination of the unsaturation of rubber and gutta hydrocarbons. Methods for preparing pure rubber and gutta hydrocarbons are included, and the corresponding iodine values found by the use of the modified iodine chloride procedure are shown to be in close agreement with the theoretical. A. R. Kemp and G. S. Mueller, Bell Telephone Laboratories.

Thinning and Gelation of Rubber Cements. The use of red filters very markedly retards the degradation of rubber in solution caused by light. Brown filters are also effective in reducing the action of light on cements. Cements of a definite viscosity with an increased gum content are more stable toward the degrading effects of light and heat than are those with a lower content. C. K. Novotny.

Automatic Modified Falling-Sphere Viscometer. An automatic, modified falling-sphere type of viscometer for very viscous liquids has been developed and been put into practical use as a factory control instrument. The instrument gives reproducible results for rubber cements and for petroleum products. In addition viscosities obtained on this instrument are nearly proportional to absolute viscosities over a very wide range. B. A. Jones.

Fluorescence of Rubber and of Compounding Ingredients. The color of the fluorescent light emitted by various rubber compounding ingredients when exposed to ultra-violet light has been observed. Many antioxidants, softeners, and accelerators exhibit fluorescence; whereas, of the inorganic pigments examined, only zinc oxide showed a characteristic effect. The fluorescent colors of various commercial brands of zinc oxide permit them to be distinguished from one another. After low-temperature ashing of rubber stocks (containing various zinc oxides) it is possible to identify the zinc oxide used, provided it has a sufficiently characteristic fluorescent color. Well-vulcanized rubber shows a yellow fluorescent color of fairly strong intensity; while decidedly undercured rubber fluoresces but slightly. Rubber loses its capacity for fluorescing almost completely upon being exposed to direct sunlight for one hour. V. N. Morris.

The Rubber Division program began Monday afternoon with a Symposium on "Progress of Chemistry in the Rubber Industry." It comprised papers of the following titles: "A Review of the Structure of the Rubber Hydrocarbon," by Harry L. Fisher and Roscoe H. Gerke; "The Mechanism of Vulcanization," Ira Williams; "Fillers and Reenforcing Agents," Norman A. Shepard, John A. Street, and Charles R. Park; and "Organic Age Resisters in Rubber Compounds," Richard R. Crawford.

1934 A. C. S. Meetings

The time and places of the 1934 meetings of the American Chemical Society are announced as follows: Eighty-seventh Meeting, St. Petersburg, Fla., week of March 25, 1934; Eighty-eighth Meeting, Cleveland, O., Autumn of 1934.

Adhesives for Hard Rubber

THE following formulae of German origin are reported for what practical advantages they may possess in hard rubber practice.

1. Carefully melt together 1 part gutta percha and 2 parts coal tar pitch. Immediately apply the fluid, homogeneous hot mass to the parts to be joined, these first having been degreased. Allow the repair to cool under pressure.

2. Broken hard rubber can be repaired by applying to the 2 surfaces to be joined, concentrated silicate of potassium and subjecting them to strong pressure.

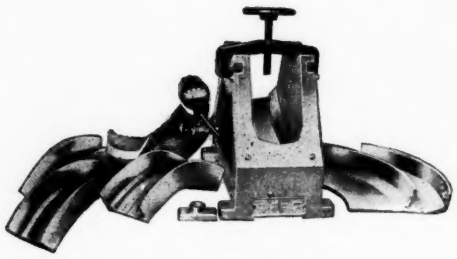
3. Marine glue is made of 10 parts rubber dissolved in 120 parts benzol or turpentine. Add 20 parts asphalt or 18 parts gum lac and allow to digest until the mass is homogeneous. The solid glue, when it is to be used, is liquefied by careful heating; while the surfaces to be joined are first heated.

4. Melt together equal parts of pitch and gutta percha. Apply hot.

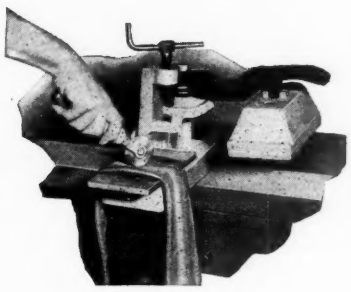
5. Dissolve 20 parts of rubber in 160 parts benzol or naphtha and mix with a solution of 20 parts gum lac and 50 parts mastic in the smallest possible amount of 90% alcohol.

When the surfaces to be adhered are smooth, it is always necessary to roughen them first by filing them lightly.

New Machines and Appliances



Moll Tire Mold



Moll Tube Vulcanizer

Simmons Lock Cap

Automatic Tire Repair Mold

THE change from old to new rim tire sizes gives special significance and timeliness to the vulcanizing mold here illustrated. This appliance is automatic, self-generating, and rapid heating. The full range of both new and old sizes of balloon tires from 4.75 up can be repaired with this apparatus. Extra reducing shell and bead plates for handling 4.40 and 4.50 sizes may be had at small additional cost. The apparatus is electrically heated, and its steam compartment is capable of holding over 10 times the normal working pressure.

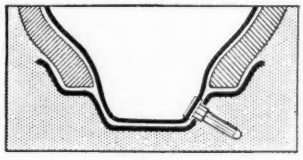
A companion tube vulcanizer for the mold above referred to is also pictured. It is notable for its rugged and simple construction, which makes it practically unbreakable. Its long-life heating element is controlled by an extra heavy thermostat and multiple-point contact breaker giving uniformity of temperature and low operating cost. Moll Mfg. Co., 3143 Osage St., Denver, Colo.

Features of New Tire Valve Assembly

SEVERAL important features are provided in the new tire valve here pictured. The entire assembly may be inserted through the valve hole in the rim, and the tire mounted without removal and reapplication of any part. The customary rim nut is entirely eliminated.

When a tire goes flat, the entire valve pulls back into the rim well without strain on the tube. Usually a flat tire on a running wheel results in tearing the tube at the valve stem. The pull back feature mentioned precludes the possibility of this sort of injury, which is often impossible to repair economically.

The valve cap and the dust cap are in one unit and incorporate a floating valve cap which, when attached to the valve stem, seals it and permits sliding the dust cap shell up or down to extend the length of the valve assembly by approximately 2 inches. This feature makes possible the valve length necessary for ease in mounting the tire on the rim. Dill Mfg. Co., Cleveland, O.

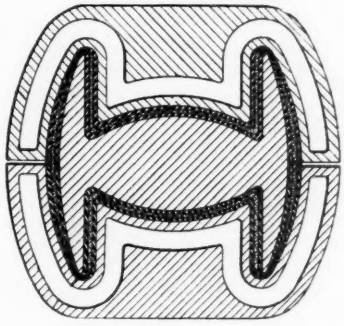


Dill Easymount Valve Assembly

Molded Cloth Inserted Water Bottle

THE possibility of breakage of rubber hot water bottles in service with serious results to the user is overcome by a new construction lately patented.[1] The increase of wall strength necessary is obtained by a new cloth insertion molded construction comprising a ply of rubber impregnated stockinette fabric located between layers of rubber composition. This patented method permits manufacturing water bottles on a core either by sliding a net cloth bag over the mold core, laying sheet rubber stock on the bag and forcing the rubber through the cloth by pressure of molding, or by cutting a pattern of the article from previously rubber coated fabric and enclosing it around the core. Application of additional rubber stock permits the manufacture of a cloth inserted molded article possessing great safety by reason of its strength.

The withdrawal of the core from the interior of a water bottle of this construction is made possible by gathering the fabric into a series of pleats or folds fitted snugly around the neck portion of the core. The extension of these pleats and the natural extensibility of the net fabric permits easy withdrawal of the core after vulcanizing, thus avoiding the necessity of leaving an opening in the bottom of the bag to be closed by subsequent vulcanization.



Transverse Section through Neck of Mold

[1] U. S. Patent No. 1,897,025, Feb. 7, 1933. Owners, Tyrrell's Hygienic Institute, Inc., Howard H. McGee, and Stephen L. Palmer.

Lock Cap for Gasoline Tanks

PROTECTION of motorists and other users from loss due to theft of gasoline from their cars or tanks is afforded by a new lock cap just announced.

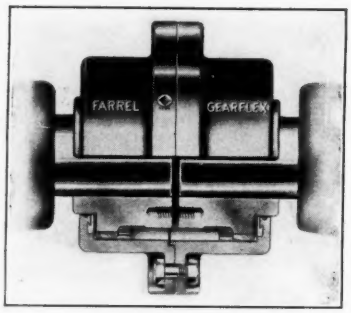
Two sizes only are required to fit all popular cars. The safety features of this cap provide against breakage of the lock which cannot be wrenched or pried off. When locked, the outer body of the cap and the inner locking bar become separate so that the inside bar grips the neck of the gas tank as the outer body of the cap revolves. When unlocked, the outer cap and the inner locking device become one unit, and the cap and the lock turn together for easy release from the tank. The lock is of 5-tumbler construction. The cap is chromium finished. Simmons Mfg. Co., Cleveland, O.

Gear-Type Flexible Coupling

THE double engagement flexible coupling of the gear type illustrated consists essentially of 2 externally geared hubs keyed to the shafts to be connected and engaging an internally geared floating sleeve which encases both hubs. With 2 sets of spur gears, one at each end of the floating sleeve, misalinement is compensated for by the sleeve assuming a neutral position between the 2 shafts. Thus all whip or crank action is eliminated, relieving bearings and shafts of heavy pressures or vibration.

The large reservoir between the hubs and the floating sleeve carries the supply of lubricant. When the coupling rotates centrifugal force throws the oil to the inner surface of the floating sleeve where it spreads between the gear teeth, entirely immersing the load-carrying surfaces in a bath of oil. The load is carried by the oil film with no metal to metal contact between the teeth, thus providing a cushioning effect which gives a high degree of quietness in operation and reduces wear to a minimum.

The coupling is also made in a single engagement type which has only one externally geared hub in engagement with an internal gear in the sleeve, the other hub being solid and the sleeve bolted to it. The single engagement type is designed to provide a lower cost coupling for applications where the high speed capacity and the high degree of flexibility of the double engagement type is not required. Both types are available in a number of standard sizes and power ratings. Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.



Farrel Gearflex Coupling

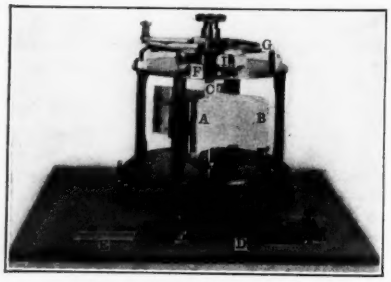
Mechanical Flow Meter

IN A rubber factory a mechanical flow meter can be used advantageously for the following measuring purposes: steam to vulcanizers; steam from boilers; water to boilers; steam or water to departments; and general testing work. The model illustrated herewith is representative of a new line of mechanical flow meters which can be furnished to record on either a square root chart or an evenly divided chart. The outward appearance of the 2 types is the same. The constructional difference lies in the transmission of the float movements to the recording pen.

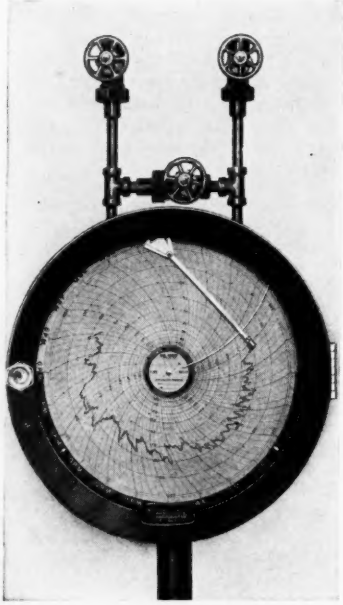
All recording models can be provided with either hand-wound or electric chart drive, and either can be furnished in a variety of chart speeds. The hand-wound clock is mounted in a dustproof case with chromium plated, stainless steel, and cadmium plated parts used where these materials have proved superior in service tests. The electric clock is a radical departure from the general type of clock construction. It is driven by a 60 r.p.m. synchronous motor with the gearing mounted on stainless steel studs on the underside of a single plate. The electric clock plate also forms the base for mounting the control mechanism.

All models are designed with easily changeable range tubes to facilitate shifting a meter from one job to another without disturbing existing orifice conditions. Mounting means have been provided so that any model may be mounted on a floor stand or wall support. The weight of the instrument has been reduced as far as is consistent with a working pressure of 1,000 pounds, and can be carried from one job to another.

This new instrument has the support of years of experience in flow meter engineering and has been developed as the result of the demand for a mechanical companion to the Brown electric flow meter. The Brown Instrument Co., Philadelphia, Pa.



The Flexometer



Brown Flow Meter

Bending Test Instrument[1]

THE flexometer instrument here shown was designed to measure the flexural work, flexural resilience, and flexural hysteresis of cloth, paper, sheet rubber, and similar materials.

Two fixed plates, *A*, 2 by 2½ inches, are attached to 2 diametrically opposite posts. A movable plate, *B*, 2 by 5⅞ inches, is mounted on a spindle, *C*, which rotates freely on a small steel ball. The specimen to be tested, 1¾ by 6 inches, is placed carefully in the mounting clamp *D*. The 2 small clamps, *E*, are given a thin coat of canadian balsam dissolved in benzol. They are then pressed against the specimen and stick to it. The excess material at each end of the specimen is cut off, making the test specimen 4 inches long. The small clamps slip on the end of the fixed and movable plate as shown at *A* and *B*. The test specimen is tangent to each plate when mounted and will fold in the angle formed by the 2 plates when the angle between the plates is decreased by rotating the movable plate on the spindle. As the specimen is folded between the plates, its resistance to folding or bending exerts a torque on the movable plate.

For symmetry and to increase the torque exerted, a pair of specimens is tested simultaneously in opposite angles. The torque exerted by the specimens on the movable plate, when they are folded to a certain angle between the plates, is measured by the deflection of a calibrated spring which is attached to the spindle. The work done in folding the specimens through any small angle is given by the product of this small angle measured in radians and the average torque. If the torque is plotted against the angle between the plates, then the area under the curve bounded by any 2 angles is equal to the work done on the specimens in folding them from the larger to the smaller angle. The work recovered in unfolding is obtained in a similar manner.

[1] *Bur. Standards, J. Research.*

A CALENDER HELPER HAD HIS RIGHT hand caught in the rolls of a 21- by 11-inch calender. This was a small experimental calender and the injured man was caught while attempting to extricate stock. He was disabled for 4 weeks, his injuries consisting of extensive lacerations to his right index, middle, ring, and little fingers. *Rubber Section, National Safety Council.*

New Goods and Specialties

Sealtyte-Leakproof Tube

A NEW advancement in tube manufacturing is attained in the 2 construction features of the Sealtyte-Leakproof inner tube. These features are a tapered rubber valve stem that is cured integral with the tube and a special compounded coating on the inside of the tube that seals the pores of the rubber. Inflation pressure, the chief factor in safety and mileage, is dependent upon tubes.

Ordinary tubes with a metal valve stem which lose up to 5 pounds' air pressure per week are constantly becoming underinflated, causing premature tread wear, stone bruises, scuffing, internal friction heat, blowouts, decreased operating efficiency, and increased danger.

The tapered rubber valve stem of this tube prevents air from escaping around the valve base. It also prevents dirt and water from entering the rim valve opening to affect the tube or rust the rim. The new stem and the coating inside the tube thus remove the causes of underinflation. They are improvements that assure increased tire safety and mileage. Firestone Tire & Rubber Co., Akron, O.

Firestone Leakproof Inner Tube

D&M Protecto Vest

THE vest here illustrated and described is an ingenious and effective device to protect the ribs, neck, and spine of those athletes who indulge in rough and ready sports. D&M Protecto, as this jacket-vest is known, is covered with genuine skookum cloth and lined with rubberized fleece cloth. Fiber strips over the ribs, a sponge rubber cushion at the base of the neck, a felt covered fiber spinal protection, and ventilating eyelets are outstanding features. The vest is said to be easy to put on and remove; is comfortable and snug to wear, yet affords complete protection at all danger points. The Draper-Maynard Co., Plymouth, N. H.

Jacket-Vest for Athletes

Rubber for Tracks

THE increasing use of tractors on all sorts of roads, and indeed even where no roads exist, has called for constant improvement in their construction. One notable instance is the rubber jointed track that consists of a series of ground shoes, to which are fixed by large diameter split pins the driving teeth which engage with the driving sprocket. Firmly between rubber blocks in the ground shoes are clamped the ends of the connecting links or rolling paths so that all movements between them and the ground shoes are taken up by distortion of the rubber blocks, there being no metallic contact between the parts.

The adoption of rubber blocks for the joints of this most ingenious arrangement has resulted in the longer life, higher efficiency, and greater adhesion which are outstanding advantages of the track. Other features are elimination of transmission shocks, of adjusting track except to assist assembly, of lubrication of the track, and of noise, and lessening of suspension shocks. Roadless Traction, Ltd., Gunnersbury House, Hounslow, Middlesex, England.

Ward's Studios

"Roadless" Rubber Jointed Track

New Waterproof Tape

A NEW tape, known as Utilitape, with many advantages claimed for it, was recently put on the market. The sticky side, which is said to adhere tightly to any dry surface in any kind of weather, will not muss your fingers. The other side, a rich brown, stays bone dry. Should it become soiled, the dirt washes off easily. Utilitape, the manufacturer states, will not curl off or fray. It is, moreover, waterproof, perspiration resisting, and insulating.

This tape is recommended for general household and sports use. In the home it may be used for repairing furniture, windows, plumbing, raincoats, and bookbindings; and it can serve as electrical tapings on lamps, bells, irons, etc., and on garden implements as hose, lawn mowers, and tools. It is suggested, too, for your car for horns, lights, steering wheels, wiring, etc.

Utilitape makes a good grip for tennis racquets, ball bats, and golf clubs. Indeed, for athletes it may be used everywhere except touching the skin. For grips and temporary tire repairs on bicycles is another service it offers. Those with motor boats will find this tape useful for ignition, horns, lights, other wiring, small leaks, and to protect rope splices. The Revolite Corp., New Brunswick, N. J.

Flexible Rubber Tufts

AFTER years of experimenting Flexible Tuft Corp., 458 Broadway, New York, N. Y., now markets a slip-under tuft of rubber for inner spring mattresses that fills a requirement long felt in the bedding industry. This tuft can be used on all kinds of mattresses, day beds, cushions, etc.

Many advantages are claimed for it that cannot be duplicated by any other tuft. "Flexible Tufts" will shape themselves into the mattress. They will stay even with the tick; yet cannot be felt when a person is lying down. They stay put and never fall out. Furthermore they are sanitary and eliminate lint waste under beds. "Flexible Tufts" hide the knots of the twine that fit under the tufts, nor will they break the twine. Besides they can be supplied in any of 6 colors to harmonize with tickings and can preserve as well as add to the appearance of the bedding.

Rubber Industry in America

OHIO

Goodrich Activities

Directors of The B. F. Goodrich Co., Akron, held their August meeting in New York, N. Y., on August 8.

E. A. Stevens, of the Goodrich purchasing department, has been elected a director of the company's crude rubber buying subsidiary in Singapore and sailed from San Francisco on August 25 for the Straits Settlements. He joined Goodrich shortly after his graduation from Yale University in 1928 and, following a course of training in crude rubber inspection and laboratory service, became a member of the purchasing department. Mr. Stevens visited the company's Los Angeles plant before sailing and will call on Goodrich friends in Yokohama, Shanghai, and Hong Kong enroute to Singapore.

Lieut. Lester Krug, former flying officer of the United States air corps at Selfridge Field, Mich., has joined the Goodrich department manufacturing deicers for aircraft. He is a graduate of Akron University.

Dr. Frank Gross, one of the world's leading glider designers, now is with the Goodrich engineering department, working on general engineering problems.

W. W. Martin, until recently managing director of Societe Francaise B. F. Goodrich, French subsidiary of the Goodrich company, has been appointed assistant comptroller of the parent company with headquarters in Akron. Mr. Martin has been associated with Goodrich since 1913. He is succeeded by R. A. Boyer, now in France.

Tire prices were raised, for the third time since the spring, on July 26 when leading manufacturers and mail order houses announced a 10% increase.

The S. & O. Sales Co., (Div.) A. Schulman, Inc., 444 W. Exchange St., Akron, manufactures Rubbermaid kitchenware. A. Schulman is president, and L. L. Oakes, vice president and general manager. The New York, N. Y., office at 1107 Broadway is in the charge of James R. Caldwell, formerly of the Caldwell Rubber Co., which the S. & O. organization took over.

The Aetna Rubber Co., Ashtabula, through President S. T. Campbell has announced that effective August 1 it commenced operations under the blanket code of the NRA. The firm also reports that it has felt more than a seasonal increase in all of its mechanical lines and that the demand of the druggists' sundries trade for Aetna's rubber gloves has materially gained during the last month.

MIDWEST

Manager Smith Presents Firestone Tires to Mrs. Larsen

Brown Rubber Co., Lafayette, Ind., makes cement applied shoe soles, sponge rubber products, jar grippers, cement kits, and scraper mats. Officers are J. J. Wiselogel, president; C. W. Howlett, vice president; Randolph Mitchell, secretary-treasurer; and C. C. Fee, purchasing agent.

The Goodyear Tire & Rubber Co., Akron, plans constructing a new steam-power plant to cost more than $500,000. The work will get under way soon and is expected to be completed during November. The main boiler will have a generating capacity of 300,000 pounds of steam an hour at a pressure of 800 pounds per square inch and will cost approximately $250,000.

The Daniel Guggenheim medal for notable achievement in the advancement of aeronautics was presented Jerome C. Hunsaker, vice president of the Goodyear-Zeppelin Corp., Akron, at a banquet of the Society of Automotive Engineers in Chicago, Ill., August 31.

Elmer E. Dearth, formerly factory manager of the Fisk Rubber Co., Chicopee Falls, Mass., is now general superintendent of the Mansfield Tire & Rubber Co., Mansfield, O.

"Two-Millionth Visitor" Gets New Set of Tires

On July 28 a sudden stirring occurred in the Firestone factory and exhibition building at "A Century of Progress," Chicago, Ill. Mrs. Chauncey Larsen, of Northfield, Minn., found herself being formally presented with a set of Firestone high speed tires, fresh from the molds and bearing the World's Fair medallion. Manager C. D. Smith made the presentation to the "two-millionth visitor," in the colorful surroundings here pictured, with a capacity crowd of visitors applauding. The Larsens had motored to the Fair, and one of the things they wanted to see most was the Firestone factory and exhibition building, including the manufacture of tires.

National Safety Congress and Exposition

The National Safety Council, 20 N. Wacker Dr., Chicago, Ill., will hold its Twenty-second Annual Safety Congress and Exposition at the Stevens Hotel, Chicago, Ill., from October 2 to 6, 1933. The general chairman of the sessions of the Rubber Section will be Charles F. Smith, of the U. S. Rubber Reclaiming Co., Inc., New York, N. Y., and the secretary will be R. A. Bullock, of the Corduroy Rubber Co., Grand Rapids, Mich.

At the session, Tuesday morning, October 3, General Chairman Charles F. Smith will speak on "A Review of Year's Activities." Other features of this program will be "Is the Rubber Industry Making Progress?" by R. W. Morse, director of Workmen's Compensation Department of the Firestone Tire & Rubber Co., Akron, O.; "The Effect of Outside Conditions on Accidents" by J. J. Loge, General Tire & Rubber Co., Akron; "The Safe Use of Carbon Tetrachloride in the Rubber Industry" by a speaker to be announced; presentation of "Data on the 1933 Safety Contest" by General Chairman Charles F. Smith; and "Presentation of National Safety Council Trophies and Certificates" by an officer of the National Safety Council.

Wednesday morning there will be an illustrated talk by a speaker to be announced on "Safety Kinks in the Rubber Industry." Other program features will be "Election of Officers;" "Time Study and Safety" by C. L. Hungerford, director of safety and hygiene of the Firestone Tire and Rubber Co.; "Respirators for Dust and Fumes in the Rubber Industry" by John M. Lewis, industrial sales manager of the

Mine Safety Appliances Co.; and "An Address" by a speaker to be announced.

The Rubber Products Co., Plymouth, Mich., was incorporated July 14 with 3,500 shares of no par stock. Production, scheduled to begin about August 15, will embrace a general line of molded and extruded rubber goods and rubber cements, principally for the automobile and refrigeration industries. Equipment is being installed as quickly as possible to produce approximately 12,000 pounds daily. Officers include Clifford B. Myers, president; Harry B. Denman, vice president and general manager; and Edgar A. Miles, secretary-treasurer. Mr. Myers was formerly vice president and general sales manager of the Baldwin Rubber Co., Pontiac, Mich.; while Mr. Denman was its factory manager. Mr. Miles is a former general superintendent of the Detroit Star Grinding Wheel Co.

The National Association of Waste Material Dealers, Inc., Times Bldg., New York, N. Y., held its Twentieth Annual Convention at the Hotel Sherman, Chicago, Ill., on August 7-8-9. The meeting closed with a banquet in the Bal Tabarin Room.

Charles E. Miller Corp., Anderson, Ind., in its rubber department manufactures sponge rubber for artificial limbs, rubber covered chrome and nickel plating racks, rubber covered wringer and printing rolls, air bags, rubber bumpers and washers, and special rubber goods according to customers' specifications. The firm also makes vulcanizing equipment and other machines. Executives include Charles E. Miller, president and treasurer; Roy E. Kilgore, vice president; and Glad S. King, secretary.

The C. P. DeLore Co. has been consolidated with the National Pigments & Chemical Co., both of St. Louis, Mo., and will be operated in the future as the DeLore Division of the National Pigments & Chemical Co. C. P. DeLore will be managing director in full charge of production and sales.

The Automotive Service Industries Show will be held at the Merchandise Mart, Chicago, Ill., October 30 to November 3, 1933, inclusive, under the auspices of National Standard Parts, Motor and Equipment Manufacturers, and Motor and Equipment associations.

Independent Rubber Co., 665-667 W. Washington Blvd., Chicago, Ill., represents L. H. Gilmer Co., Tacony, Philadelphia, Pa., and Mercer Rubber Co., Hamilton Square, N. J.

The Fisk Rubber Co., Federal Rubber Co. Division's entire plant, Cudahy, Wis., was sold at auction last month. It is reported that the land, buildings, machinery, and minor equipment brought about $275,000.

Rubber and leather goods to the amount of $2,950,000 were purchased by Class I railways in the United States during 1932.

NEW JERSEY

Business continues good at the New Jersey rubber plants, and officials are hopeful for the future. The concerns have announced that they are ready to sign the NRA code and place the new working hours into effect. A few have already signed. The price of tires again was raised. Another 5% increase is expected by early fall. Little change occurred in the hard rubber situation.

The Rubber Manufacturers' Association of New Jersey will hold its annual outing and dinner at the Trenton Country Club, Trenton, early in September. The sports program will consist of golf and tennis. John A. Lambert, vice president and general manager, Acme Rubber Mfg. Co., Trenton, is president of the association.

Trenton rubber workers recently organized a labor union at a meeting attended by 700 employes and conducted by the American Federation of Labor. Temporary officers were elected, and an agreement drafted. Trenton had a rubber workers' union some years ago, but after a time it was disbanded.

E. I. du Pont de Nemours & Co., Inc., has announced that the plant of its subsidiary, Newport Chemical Co., at Carlville, Wis., will be moved to the Carney's Point area in Deepwater, N. J., because of the proximity to the eastern dye markets.

Thiokol Corp., Yardville, through President Bevis Longstreth stated that the arrangement with Monsanto Chemical Works, Ltd., London, England, for the sale and distribution of Thiokol in Europe does not affect its arrangements in the United States. The company organized a separate company, Thiokol, Ltd., to which the parent concern conveyed the foreign patent rights, and the Monsanto contract is with the new company and applies only to Europe. All Thiokol in the United States is sold by Thiokol Corp. direct to rubber and cable companies.

The United Color & Pigment Co., Evergreen Ave., Newark, has perfected a new Cadmium yellow and red for coloring rubber. John Allegaert is sales manager of the company.

E. J. Dempsey, for 15 years associated in the manufacture of rubber goods, has resigned as general manager of manufacturing with the Dominion Rubber Co. of Canada to become works manager of the Calco Chemical Co., Bound Brook, N. J., a subsidiary of American Cyanamid & Chemical Corp., 535 Fifth Ave., New York, N. Y.

The Passaic Rubber Co., Clifton, manufactures electrical tapes and mechanicals. H. C. Mathey is president, and F. N. Bidwell, vice president.

Essex Rubber Co., Trenton, running to capacity in all departments, has rehired some of its former employes.

Puritan Rubber Co., Trenton, is very busy with large sized orders for rubber tiling.

The Pocono Co., Trenton, reports that business continues good.

General C. Edward Murray, president, Crescent Insulated Wire & Cable Co., Trenton, celebrated his seventieth birthday July 17. He is one of the pioneers in the local rubber industry.

Mercer Rubber Co., Hamilton Square, has signed the new NRA code and is operating on a 40-hour week. Business declined somewhat during the past month. President William H. Sayen has been spending some time with his family at the Thousand Islands.

Murray Rubber Co., Trenton, again raised the price of tires to conform with the larger manufacturers. The company has hired a number of new men and now operates both night and day shifts.

Commercial Rubber Co., Newark, leased 30,000 square feet of a factory at Nelson and Willow Sts., Bloomfield, and moved there. A number of employes are being added in an expansion of operations, which comprise reconditioning used automobile tires. Company executives include L. L. Barnholt, president; E. P. Stephenson, secretary; and J. F. Stephenson, treasurer.

Acme Rubber Mfg. Co., Trenton, now operates about 85% capacity with a 100% increase in the number of employes. Officials announce that prospects are good until the late fall. Because of the many price changes a clerical force is compelled to work overtime.

Joseph Stokes Rubber Co., Trenton, has let a contract for the replacement of a steel and corrugated iron building, 60 by 100 feet, to cost $7,500, to be used for dust grinding purposes. The Stokes company continues to operate with a day and a night shift, with a 100% increase in help.

Pierce-Roberts Rubber Co., Trenton, now manufactures a number of new novelties for out-of-town concerns. The firm is operating with 2 shifts.

Horace B. Tobin, president, Woven Steel Hose & Rubber Co., Trenton, during August vacationed with his family at Paradise Ranch in the Big Horn country of Wyoming. They also visited the Century of Progress Exposition, Chicago, Ill.

L. Dahl Riddervold, of the Den Norske Galosche & Gummivarefabrik, Mjondalen, Drammen, Norway, was a recent visitor to the United States.

A PRESS HELPER WHILE PULLING MOLDS out of a press had his left index finger caught between 2 molds. His finger was injured to the extent that it became necessary to amputate the finger at the first joint. This injury was charged with 150 days lost. *Rubber Section, National Safety Council.*

FINANCIAL

United States Rubber Co.

TO THE STOCKHOLDERS: Net sales for the 6 months ended June 30, 1933, amounted to $36,494,680. Sales for the first 6 months of 1932 were $42,432,014. Net sales of the Samson Tire & Rubber Corp., Los Angeles, Calif., and of the Gillette Rubber Co., Eau Claire, Wis., which have not been included with the sales of the United States Rubber Co., amounted to $4,489,787 for the first 6 months of 1933, compared with $6,202,020 for the same period of 1932.

The loss from operations, after interest on funded indebtedness of $2,027,073 but before provision for depreciation, amounted to $224,204. Provision for depreciation was $3,195,100 and the net decrease in surplus account amounted to $3,419,304.

The condensed consolidated balance sheet as of June 30, 1933, follows:

ASSETS	
Cash of parent company	$4,372,825
Cash of subsidiary companies	1,418,209
Marketable securities	97,619
Accounts and notes receivable (net)	19,124,810
Inventories	17,927,909
Total current assets	$42,941,372
U. S. Rubber Plantations, Inc.	$27,487,959
U. S. Rubber Co. bonds and notes (at cost):	
Held by trustees of insurance fund	844,343
For investment	520,386
Securities of controlled companies	3,757,380
Other securities and mortgages	1,007,578
Total investments	$33,617,646
Property and equipment (net)	$79,849,917
Prepaid and deferred assets	2,641,806
	$159,050,741
LIABILITIES	
Accounts and acceptances payable	$3,797,519
Accrued liabilities	3,213,466
6½% Serial notes due March 1, 1934 (net)	1,552,000
Total current liabilities	$8,562,985
Long term indebtedness (net)	$71,294,298
Reserves	4,306,558
Minority interest in subsidiary companies	338,700
Capital stock—preferred	65,109,100
Net worth of common stock—1,464,371 shares no par value	9,439,100
	$159,050,741

The plantations had a loss of approximately $156,000 after all charges, including provision for depreciation amounting to $168,000. These results have not been included in the statement of the United States Rubber Co.

F. B. DAVIS, JR.,
Chairman.

1790 Broadway,
New York, N. Y.
August 2, 1933.

St. Joseph Lead Co.

St. Joseph Lead Co., 250 Park Ave., New York, N. Y., and subsidiaries reported for the 6 months ended June 30 a net loss after taxes, interest, depreciation, depletion, and minority interest of $1,303,212, against $1,448,901 loss a year before.

New Jersey Zinc Co.

New Jersey Zinc Co., 160 Front St., New York, N. Y., for the 6 months ended June 30 reported a net profit after depreciation, depletion, taxes, contingencies, and other charges of $1,370,380, equal to 70¢ a share on 1,963,264 par $25 shares, compared with $1,078,999, or 55¢ a share, in the first half of 1932. For the quarter ended June 30, the company showed a net profit after the same charges of $933,002, equal to 48¢ a share, compared with $437,378, or 22¢ a share, in the preceding quarter and $487,896, or 25¢ a share, in the second quarter last year.

The B. F. Goodrich Co.

The B. F. Goodrich Co., Akron, O., and its subsidiaries for the 6 months ended June 30, 1933, report a net profit of $870,577 after full provision for depreciation, interest, and federal income tax.

The operating profit for the period, after deducting approximately $650,000 of non-recurring charges, amounted to $311,659. To this was added a profit of $2,303,798 arising from purchases of the company's bonds and debentures and $746,126 representing appreciation in foreign exchange rates, giving a total of $3,361,583. From this was deducted $2,491,006 covering interest, miscellaneous corporate charges, and provisions for federal income tax, resulting in the net profit of $870,577, as stated above.

A marked increase in demands for the company's products has made necessary practically full capacity operations of the various plants.

The company continues in a strong financial position. Current assets of June 30 last amounted to $50,991,509 (including $15,257,208 of cash and Government securities) and current liabilities to $8,037,306, giving a ratio of 6.34 to 1.

The B. F. Goodrich Co. has signed the President's reemployment agreement and is operating all divisions of its business in keeping with the terms thereof.

United Carbon Co.

United Carbon Co., Charleston, W. Va., and subsidiaries announced for the 6 months ended June 30 a profit after depreciation and depletion, but before federal taxes, of $300,731, compared with $104,636 in the first half of 1932. For the quarter ended June 30 the firm had a profit after the same allowances of $171,760, compared with $128,971 in the preceding quarter and $42,969 in the second quarter of last year. The company stated that all bank loans have been repaid.

Intercontinental Rubber

Intercontinental Rubber Co., 745 Fifth Ave., New York, N. Y., and subsidiaries for the 6 months ended June 30 report a loss after expenses, miscellaneous taxes, shut-down expenses of Mexican plants, depreciation, and other charges, of $102,891, compared with $162,868 loss in same period last year. The figures for 1933 do not include $61,241 credit resulting from rubber and short-term notes.

Raybestos-Manhattan

Raybestos-Manhattan, Inc., Passaic, N. J., earned a profit of $292,825.10, equivalent to 46¢ a share on net sales of $2,727,891.23, during the quarter ended June 30, 1933, comparing with a loss of $106,727.65, upon sales of $2,155,602.80, during the same quarter in 1932.

During the 6 months ended June 30, 1933, the company earned a net profit of $229,396.59, or 36¢ a share, on sales of $4,512,570.75. In the same period in 1932 the company incurred a net loss of $117,600.10 on sales of $4,516,679.29. The company has no banking or funded debt, or capital obligation senior to the common stock. Net current assets at June 30, 1933, were $6,236,601.59, of which $3,086,862.10 represented cash and marketable securities. These net current assets amounted to $9.70 a share on the 642,900 shares of its common stock issued and outstanding in the hands of the public.

Thermoid Co.

The Thermoid Co., Trenton, N. J., and wholly owned subsidiaries showed a net profit of $409.92 for the 6 months' period ended June 30, 1933, after deducting all charges, including interest and depreciation, which totaled $141,771. This compares with a net loss of $80,970 for the first half of 1932. For the first quarter of 1933 a loss of $103,363 was shown. On this basis, then, a net profit of $103,773 was earned for the second quarter.

In addition to the above there was a credit to surplus of $42,170 through acquisition of the company's gold notes

(*Continued on page* 52)

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Firestone Tire & Rubber Co.	Pfd.	$1.50 q.	Sept. 1	Aug. 15
Gates Rubber Co.	Pfd.	$1.75 q.	Sept. 1	Aug. 15
Goodyear Tire & Rubber Co.	1st Pfd.	$0.50 q.	Oct. 2	Sept. 1
Raybestos-Manhattan, Inc.	Com.	$0.15 q.	Sept. 15	Aug. 31
United Elastic Corp.	Com.	$0.20	Sept. 23	Sept. 7

OBITUARY

Former U. S. Rubber Executive

LESTER LELAND, Boston financier and a former vice president of the United States Rubber Co., died July 30, 1933, at his summer residence in West Manchester, Mass., at the age of 69. He was a native of Boston where he began his business career as assistant to the president of the Metropolitan Street Railway Co. Later he became treasurer of the Boston Heating Co., and subsequently chief purchasing agent for the Metropolitan Telephone Co. of New York.

In 1893 Mr. Leland became treasurer of the Boston Rubber Shoe Co., Boston, Mass., and when that company was absorbed by the United States Rubber Co. in 1898, he became a director and a member of the executive committee of the merged companies and ultimately a director in virtually every rubber company in the country.

In the outbreak of the Spanish-American War he resigned from the staff of the Brigadier-General commanding the Second Brigade of the Massachusetts Volunteer Militia and served throughout the war as Second Lieutenant of Company C, of the Fifth Massachusetts Infantry.

Mr. Leland belonged to the Union, Brook, and Knickerbocker clubs in New York and the Somerset, Tennis and Racquet, Union, and Exchange clubs of Boston. He was married in 1892 to Miss Frances Eugenia Converse, of Boston, daughter of Elisha S. Converse, founder of the Boston Rubber Shoe Co.

Veteran Rubber Man

JAMES KIPP, 88, who retired in 1917 as manager of the Goodyear Rubber Co., formerly of 787 Broadway, New York, N. Y., died August 7, 1933, at his home in Tenafly, N. J.

His service with the rubber company covered a period of 54 years. Mr. Kipp descended from Dutch ancestors who came to America in the seventeenth century. His wife, likewise, was of distinguished Dutch lineage. The deceased was a member of the Union League Club of New York and the Bergen County (N. J.) Historical Society.

Surviving are 3 daughters.

Hard Rubber Executive

F. A. WILLIAM SCHRADER, senior member of the firm of Schrader & Ehlers, 239 Fourth Ave., New York, N. Y., died July 15, 1933, at his home in Bethel, Conn., at the age of 72. For 4 years following graduation from the high school in his native town of Harburg, Germany, he was identified with the firm of Schulte & Schemmann, Hamburg, Germany.

In 1880 he was connected with the

F. A. William Schrader

Harburg Rubber Comb Co., Harburg, and 9 years later came to the United States to take charge in New York, N. Y., of the interests of the American branch of that company.

In 1893 he became associated with William Ehlers as senior partner in the firm of Schrader & Ehlers, representing the New York-Hamburg Rubber Co., as distributing agents. He was also treasurer of the Atlantic Rubber Mfg. Corp., and a member of the National Arts Club, both of New York, N. Y.

Robert Koehl

ROBERT KOEHL, 56, died after a long illness at his home, 22-24 122d St., College Point, N. Y., on August 14, 1933.

For many years he was active in political circles in College Point, of which he was a life-long resident. He had held various offices in the Regular Republican Club and the Marvin Lodge of Odd Fellows. He had been employed by the American Hard Rubber Co. for 35 years and was in charge of stores at the College Point plant at the time of his death.

His widow, a son, his father, and a sister survive Mr. Koehl.

Machine Company Head

ON AUGUST 2 died A. F. Schoen, president, general manager, and one of the organizers of The National Sherardizing & Machine Co., New Haven, Conn., which he with 4 other men started as The New Haven Sherardizing Co. in 1909. The present name was adopted in 1930.

Mr. Schoen was born in Germany 54 years ago. When 5, he came to this country with his family. He worked on his father's farm in Connecticut until he was 19; then he joined The Stanley Works, New Britain, where he remained until he helped organize the company of which he was president at the time of his death.

While a resident in New Haven, the deceased was active in fraternal affairs and was a past grand of Relief Lodge, I. O. O. F., and a member of Wooster Lodge, F. & A. M., and Yusef Kahn Grotto, M. O. V. P. E. R., Akron, O., and a former officer of the Hartford Purchasing Agents' Association.

He leaves his wife, a son, 2 daughters, 3 brothers, 2 sisters, and 6 grandchildren.

Funeral services were held August 5 at the Schoen home. Interment was in Cedar Hill Cemetery.

Augustus O. Bourn, Jr.

AUGUSTUS O. BOURN, JR., 68, son of the late Governor Augustus O. Bourn, of Rhode Island, and for many years active in the rubber manufacturing industry as head of the Bourn Rubber Co., Providence, R. I., died recently at the Rhode Island Hospital. The deceased studied at Brown, Harvard, and Columbia universities and received several degrees in law and accounting. He was associated with his father for several years in the rubber industry, holding an executive position with the Bourn company. Later he went to New York, where he practiced law and was counsel in numerous cases of national interest.

He is survived by 2 sisters and a brother.

Anhydroformaldehyde-para-toluidine

Formerly one of the most important uses of anhydroformaldehyde-para-toluidine was in solid tires. The consumption of this accelerator for that purpose, however, is greatly reduced because of the sharp decline in solid tire production. Its outstanding characteristic is its exceedingly long range of cure, making it particularly suitable as an accelerator for very thick masses of rubber. In recent years it has been applied to a number of new uses; the most important of which is as an accelerator for Captax and Captax derivatives. It has the unique property, when used with Captax, of retarding the cure at low temperatures, thereby reducing scorching tendency and at the same time activating the Captax and increasing the rate of cure at higher temperatures. Stocks cured with this combination have higher tensile strength and less tendency to stiffen and become short when aged at high temperatures.

Bitar Bros., Para, Brazil, established in the exporting business for 36 years, operate a rubber washing plant, manufacture rubber products, and deal in tires, tubes, and other rubber goods.

NEW ENGLAND

The Davidson Rubber Co., Boston, Mass., is installing a complete new power plant, including a high-powered steam engine of the uniflow type and new condensing equipment and spray towers.

The mill room is being enlarged and a new unit is designed to provide power for additional 60-inch mills which are being installed. Improvements will give the company a complete, modern, and most efficient power plant which is expected to be in operation by January.

National India Rubber Co., Providence, R. I., after installing new machinery at its plant on Eagle St., within the next few months will be able to employ about 350 additional persons there, announced General Manager Charles W. Rehor. The increase, he states, is due to the development of a new process of rubberizing textiles and the sharp advance in the demand for the resulting product.

Davol Rubber Co., Providence, R. I., recently held the annual outing for its employes and their families at Rocky Point on Narragansett Bay. James Montague, president, and Owen Lowe, secretary, of the company's Beneficial Association were active in arranging the affair, which was marked by a program of land and water sports, and a bake. Walter L. Davol, assistant sales manager, and Leon R. Nodine, foreman, represented the concern.

Davol is altering its plant on Point St., which will include partition work for hospital quarters.

Ernest I. Kilcup, Davol secretary, recently elected president of the National Association of Credit Men, last month was presented with a chest of flat silverware by the Rhode Island Association of Credit Men at a testimonial dinner given him at Narragansett Hotel. More than 250 members and guests attended, including Acting Governor and Mrs. Robert E. Quinn.

The Collyer Insulated Wire Co., Pawtucket, R. I., reports increased business, with several departments operating full time and a few working double shifts. At the directors' meeting last month the balance sheet indicated a healthy condition with a quick net of $1,172,419 against current liabilities of only $40,000 as of May 31. A dividend of 10¢ a share was ordered.

The Phillips-Baker Rubber Co., Providence, R. I., manufacturer of rubber footwear, has awarded a contract for a rubber cement house of brick, 18 by 30 feet. A 2-story brick and steel building, 110 by 95 feet, of mill construction with flat roof, for manufacturing purposes, is also being constructed at the plant.

George C. Moore Co., Westerly, R. I., elastic web manufacturer, last month increased wages 35%, affecting the entire force of over 700 employes, now on a 40-hour week.

EASTERN

The Fourteenth Chemical Industries Exposition will be held in the Grand Central Palace, New York, N. Y., during the week of December 4 to 9, 1933. The holding of this show is an industrial action of special significance and timeliness because it brings in review some 40 industries engaged in chemistry and chemical engineering, and their industrial applications. This year's exposition will focus attention on the most modern, advanced, and efficient methods, machines, and products and will prove a veritable clearing house of information on industrial development.

Charles T. Wilson Co., Inc., 99 Wall St., New York, N. Y., crude rubber importer, has been appointed United States agent for Dunlop 60% latex.

R. W. Rhoades Metaline Co., Inc., Long Island City, N. Y., manufacturer of oilless bushings and bearings, also specializes in chemists' laboratory stoppers made according to United States Bureau of Standards specifications and approved by many university and industrial laboratories.

Smith Chemical & Color Co., 28 Moore St., New York, N. Y., has appointed A. E. Nelson, formerly with Reichard-Coulston, Inc., to its sales and promotional departments. His headquarters are in New York, and his territory covers the Middle Atlantic states.

Marshall Asbestos Corp., Troy, N. Y., manufacturer of brake lining for the factory production and replacement trades, has appointed as technical director Robert L. Moore, formerly chief chemist of the Thermatomic Carbon Co., Pittsburgh, Pa.

Cannon Mills, Inc., 70 Worth St., New York, N. Y., selling company for Cannon Mills Co. and other mills, held a meeting of the directorate on August 12, at which Frederic A. Williams, treasurer, was elected also president, succeeding Charles A. Cannon, who becomes chairman of the board.

Paragon Rubber Co., First Ave. and 57th St., Brooklyn, N. Y., is well equipped to manufacture molded specialties and would appreciate any inquiries that may be referred to the firm in the interest of inventors or others who wish to introduce molded specialties.

Niagara Falls Haircloth Works, Niagara Falls, N. Y., manufactures haircloth and uses rubber latex. J. T. Williamson, Jr., is manager.

Godfrey L. Cabot, Inc., 940 Old South Bldg., Boston, Mass., recently gave an order to the American Car & Foundry Co. for 5, 40-ton steel bulk commodity cars for handling carbon black. Cabot will raise its carbon black production figures to nearly 2,000,000 pounds a month beginning October 1.

FINANCIAL

(*Continued from page* 50)

at discounts. The current ratio of The Thermoid Co., excluding the bonds which mature in February, 1934, was over 5 to 1.

The Southern Asbestos Co., a 96% owned subsidiary, for the first 6 months of this year showed a net profit, after depreciation and allowance for taxes, of $4,093. Current ratio of the Southern Asbestos Co. was better than 14 to 1.

Goodyear Tire & Rubber

Goodyear Tire & Rubber Co., Akron, O., reports a profit of $560,951.33 for the first 6 months' operations ended June 30, 1933. The profit was carried to the earned surplus account and a net operating loss of $738,036.38 was reflected. Net sales for the period were $51,481,898.45 which compares with $68,953,760 for the first 6 months of 1932.

The balance of profit carried to earned surplus as of June 30, 1932, was $50,509.28 and at the end of that year a loss of $850,349.04 was transferred to surplus.

New Incorporations

Alco Sales Corp., (N. Y.), capital 200 shares, no par value. Roe & Kramer, 68 William St., New York, N. Y. Crude rubber.

Paul Bertuch & Co., Inc., July 6 (N. Y.), capital 500 shares, no par value. M. Tingley, 80 Broad St., New York, R. Miller, 1110 Wyatt St., Bronx, and M. Smulow, 1322 E. 8th St., Brooklyn, all in N. Y. Rubber products.

Douglas Haldane & Co., Inc., Aug. 9 (N. Y.), capital 1,500 shares, 1,000 preferred, value $100, and 500 no par value. W. R. Foster and R. M. Burkard, both of 140 Nassau St., and D. D. Haldane, 15 William St., all in New York, N. Y. Rubber goods.

Hope Rubber Co., Inc., Providence, R. I. Capital $25,000 consisting of 250 shares common stock, par value, $100 each. H. M. Baker, 210 W. Exchange St., E. H. Mueller, and W. J. Goff, all of Providence.

The National Universal Rubber Co., Inc., Providence, R. I. Capital 100 shares common, no par value. S. H. Workman, H. C. Acaro, and T. J. Paulino, all of Providence. Manufacture and deal in rubber goods.

Fred Pusinelli & Co., Inc., (N. Y.), capital $20,000. F. Pusinelli, 325 E. 79th St., and W. R. Douglass, 317 W. 99th St., both of New York, N. Y., and C. H. Thomas, 165 Euclid Ave., Ridgefield Park, N. J. Filed by Beekman, Bogue & Clark, 15 Broad St., New York, N. Y. Rubber.

John Wattenberg, Inc., Yonkers, N. Y. Capital $10,000. E. Lauterbach, 20 Franklin Ave.; L. Nowicki, 62 Huber Pl.; and E. Gurdin, 461 Riverdale Ave., all of Yonkers. Rubber and leather goods.

Rubber Industry in Europe

GREAT BRITAIN

Softened Rubber

Softened rubber is now being produced from ordinary plantation crepe and sheet, according to *The India Rubber Journal*.[1] The pieces of crepe or sheet are first soaked in tanks to soften them and then rapidly reduced to crumb by a machine consisting of a pair of rolls working in a hopper. The crumb is placed in trays in a heater which can treat 1,000 pounds in one charge, heated for about one hour in vacuum and then under controlled conditions for about 40 minutes. At the end of this time the mass looks like toasted cheese, and it is finally passed through sheeting rolls.

Greater plasticity than ordinary masticated rubber is claimed for the new product; it facilitates masticating, mixing, calendering, tubing, molding, and spreading, saving time, power, labor, and solvent and increasing output and efficiency. The danger of scorching is said to be reduced; calendering and tubing give smooth surfaces. Spreading doughs and solutions having much lower viscosity than usual permit varied mixings and the addition of a much greater proportion of mineral fillers; while unvulcanized softened rubber dough holds its shape much better, a matter of importance in calendered, forced, or stamped goods and in molding ebonite.

Mechanical properties and aging are said to be unimpaired. But practically pure mixes, containing little filler, show a slight falling off in breaking strain as compared with ordinary rubber. More heavily compounded rubber, however, as tire treads, shows no difference in mechanical properties when compared with ordinary mixes. For comparatively pure mixes, therefore, blending softened rubber with ordinary rubber is advised; thus a 50/50 mixture is recommended for high grade inner tubes.

[1] July 15, 1933. B. P. No. 368,902.

Silvertown and Goodrich Negotiate

Details of the reconstruction plans of the India Rubber, Gutta Percha & Telegraph Works Co., Ltd., have just been issued and provide among the rest for a reduction of the ordinary share capital from £750,000 to £150,000; redemption of the £400,000 5% mortgage debentures due in 1936 to be extended to 1972 with the option of earlier repayment after 1940 at 1½% premium; dividend on the 250,000 5% cumulative preferred £1 shares to be increased to 5½% per annum as from September 30 next, such dividend to be non-cumulative for 2 years and thereafter cumulative, and all arrears from July 1, 1930 to September 30, 1933 to be canceled. It is further proposed to create 100,000 new £1 common shares to be subscribed for in cash at par by the British Goodrich Rubber Co., subject to the scheme becoming effective about November 15. These shares will be entitled to 10 votes each, thus giving voting control to Goodrich.

If the scheme is adopted, the Goodrich company will be represented on the Silvertown board, and one director of the latter firm will be elected to the Goodrich board. The British Goodrich company requires further space for its expanding business, and it is expected that the close working together of the 2 companies will prove beneficial to both.

Rubber Industry Bill

While it was known that certain rubber manufacturers have consistently opposed the Rubber Industry Bill and a number had signed a petition against it, nevertheless it was thought that the majority favored it. It had already passed the House of Commons and was about to be introduced in the House of Lords when quite unexpectedly the Dunlop Rubber Co. and the India Rubber Manufacturers' Association announced that they also opposed the Bill, which has therefore been dropped.

The Dunlop firm, it is further learned, has given up its membership in the Rubber Research Association.

This situation is viewed with alarm by the Oil and Color Chemists Association, which at its general annual meeting passed a resolution stating that it was convinced that the work of the Rubber Research Association was essential for the maintenance and the welfare of the rubber industry.

Latex Protective Coating

Very little use has apparently been made in the past of the non-adhesiveness of the rubber latex film, the *Bulletin of the Rubber Growers' Association* points out. Efforts in the past have been chiefly directed toward making latex films adhesive. However latex is now being sprayed on to articles, as chromium plated parts for automobiles, to form a protective coating during transportation. The film is easily peeled off at destination. It is also suggested that radio and refrigerator cabinets could be sprayed with latex, or that latex might be used as a rust protector. A latex oil emulsion might thus find use to protect razor blades, cutlery, etc., for export to damp climates.

British Notes

A perfectly life-like rubber baby, the size and weight of a new-born infant, with movable head and limbs, has just been put on the market to teach mothercraft. The original carved wood models were approved by a committee of doctors.

David Moseley & Sons, Ltd., Manchester, manufacturer of rubber goods including Float-on-Air cushions and beds, celebrated its one hundredth birthday July 22, 1933. The firm, it should be mentioned, was a pioneer in making tires for cycles and automobiles, and mats and hose figured among its earliest products. The firm has also a special mackintosh department and produces a variety of sporting and mechanical goods.

The well-known German colloid chemist and rubber technologist, Professor Freundlich, will join the University College, London, next year. He was formerly head of the Kaiser Wilhelm Institute, until ejected by Nazis. An Academic Assistance Council has been formed in England to assist Jewish scholars who have been expelled by the Nazis, and Professor Donnan, head of the chemistry department of University College, is taking a very active part in promoting the work of this body.

No interim dividend on the 7½% cumulative preferred shares of the India Tire & Rubber Co. is to be paid, it is reported. The last payment was made June 30, 1931.

Tractor tires with pressure of 10 to 16 pounds have been introduced by Dunlop and Firestone. Tests indicate that these tires are as satisfactory on a ploughed field as well as on a main road.

S. T. Rowe, deputy chairman of the Greengate & Irwell Rubber Co., Ltd., is the new chairman of the India Rubber Manufacturers Association, succeeding L. V. Kenward.

France

In regard to chemical patents, French patent law so far has been based chiefly on the patentability of the product rather than of the process. It is now proposed to change this ruling so that more stress will be laid on the patentability of the process. Furthermore it

is planned to extend the maximum life of the French patent from 15 to 20 years and to substitute an application fee of 1,000 francs to be paid in a lump, for the present system of annual payments. Compulsory coownership of employes' inventions and arbitration to decide whether contracts regarding invention provide adequate remuneration for employe inventors are also envisaged.

Latex Process

Originally the process of a prominent rubber company[1] for producing articles from latex was as follows. Various thickening and coagulating substances, especially certain oxides of bi-valent metals, in combination with an ammonium salt, were added to the latex at a temperature to give most increase in viscosity without coagulation.

At subsequent suitably raised temperature the ingredients added would cause more or less rapid thickening of the latex and finally coagulation. Thus when heated molds were coated with the prepared latex, a compact layer of coagulated latex would form, which after drying was further treated and vulcanized as desired.

The process applied to both ordinary 38% latex and to concentrated latex. In practice, however, disadvantages in connection with both types of latex developed. Thus while concentrated latex so treated formed a suitably thick skin with comparative rapidity, there was the disadvantage that concentration of latex requires time and the addition of large quantities of dispersion agents which have a deleterious effect on the physical and mechanical properties of the final product. Furthermore concentrated latex mixes show less stability than ordinary latex mixes.

On the other hand, when ordinary latex was used, the layer formed on the heated surface was only of limited thickness and required much longer to form.

By a modification of the basic process the advantages of concentrated and ordinary latex can be combined. This consists in preheating the ordinary latex, to which about 4% ammonia has been added to 40 to 60° C. and then cooling it to room temperature before the thickening and coagulating agents are added.

Latex thus treated presents no deviation in properties as compared with untreated latex, only it is slightly more viscous, and the mixture should be allowed to rest a few hours before it is used for making articles. Various other ingredients, as fillers, pigments, accelerators, etc., may be added to the latex after it has been preheated and cooled; and a variety of articles as caps, gloves, nipples, tubes, rods, and also rubberized fabric can be produced.

[1] Societa Italiana Pirelli, Milan, Italy. *Gummi-Ztg.*, July 28, 1933. German Patent No. 578,472.

GERMANY

Deutsche Kautschuk Gesellschaft Meeting

The members of the Hamburg Section of the Deutsche Kautschuk Gesellschaft met recently when 3 short papers were read by W. Esch: "The Development of the Production of Carbon Black in North America," "The Influence of Latex Preparations on Rubber Vulcanizates," and "Sprayable Rubber Solutions."

It was then reported that Mr. Boyksen-Pinneberg had been attempting to produce surgical thread from latex to replace catgut. He has succeeded in obtaining an excellent thread, but so far it had not been possible to attain complete absorption. Mr. Esch remarked that in fairly old tests in which gutta percha leaves had been fed to insects, the gutta percha had been naturally eliminated in practically unchanged condition and that unvulcanized rubber was still more stable, so that little chance existed that rubber in the form of surgical thread would be completely absorbed. On the other hand slightly vulcanized rubber could, in some cases, be converted into a product closely resembling shellac after only a few days of aging by the Schrader-Geer process.

This point led Mr. Bunz to remark that it might be advantageous from an economical point of view to investigate the possibility of converting rubber into shellac or merely into resins which behave like shellac. The price of shellac continues as high as ever, and it is indispensable for various purposes.

Preserving Latex

Raschit is an antiseptic used for some time to prevent mold, fermentation, and putrefaction in glues, inks, leather finishes, dressings for textiles, etc. From a note in the *Le Caoutchouc & la Gutta-Percha* it appears that it is now also recommended for preserving latex. The product, made by a German firm, is said to be chemically pure parachloro metacresol, is colorless, crystallized, and melts at 65°. It has a slight, not unpleasant odor hardly noticeable in the weak concentrations in which it is usually applied. While its antiseptic action is said to surpass that of sublimate, it is non-poisonous and harmless to man and beast. Raschit is insoluble in water and aqueous fluids. When used to preserve latex, 1 kilo of a solution of Raschit in tetraline (1:7) is added to 1,000 kilos of latex.

German Notes

The Asbest Gummiwerke Alfred Calmon A.G., Hamburg, has changed its name to Tretorn & Calmon Gummiwerke A.G. Tretorn is a trade name of the Helsingborgs Gummifabriks A.B., Helsingborg, Sweden, which now has a considerable interest in the Calmon firm and has made available to the latter its rubber footwear processes.

Dr. E. Kindscher is now business manager of the Deutsche Kautschuk Gesellschaft.

The Reale Accademia Nazionale dei Lincei, Rome, Italy, has awarded the Cannizzaro Prize to Prof. H. Staudinger, director of the chemical laboratory of the University of Freiburg, in recognition of his work on the constitution of high molecular substances, rubber, and cellulose.

The Goodyear Tire & Rubber Co., G.m.b.H., Danzig, has been dissolved.

The Shoemakers' Guild of Rostock, it is learned, is petitioning the government to forbid rubber soles in the plea that the people's money should be spent in Germany and not go abroad to pay for foreign rubber; while, furthermore, rubber soles are unhealthy.

Sweden

A composition consisting of rubber, fat, and wood tar is intended to protect concrete surfaces and is to be heated to 100 to 150° C. before being applied by brush. The mixture is said to combine a high degree of plasticity at normal temperature with high resistance to water, acids, and chemicals.

Because of the Danish tariff and exchange regulations the Helsingborgs Galoscher A.S., Sweden, proposes to start a branch rubber footwear factory at Copenhagen, Denmark, with daily capacity of 2,000 pairs.

Glyptal

Glyptal is a synthetic resin material produced from phthalic anhydride and glycerine. It can be called a synthetic resin with flexible molecules. In this respect it differs from other synthetic resins, such as those of phenol and urea, which may be said to have rigid molecules. It is this unique molecular structure that makes Glyptal a valuable base for insulating compounds that must be tough, resilient, elastic, tenacious, and not readily decomposed.

Because of its inherent qualities Glyptal treated cloth has distinct advantages over varnish treated cloths as an insulation material. Manufacturers of electric apparatus have long sought an insulation that can be used in oil or gasoline. Rubber is useless because it cannot withstand the action of oil. Varnished cambric insulation is not immune to hot oil, but Glyptal cloth insulation can be immersed in oil or its derivatives for years without showing any signs of deterioration. In addition to its ability to resist oil and heat this new insulation is characterized by unusual flexibility and toughness which enable it to withstand severe mechanical abuse such as compression, bending, or abrasion.

Rubber Industry in Far East

MALAYA

Native Producer Favored

When Sir Eric Geddes, chairman of the Dunlop Rubber Co., at the last annual meeting argued against restriction, proclaiming that the only remedy for the present situation was for estates to use modern methods like Dunlop's and produce at a figure that would make it unprofitable for the native to tap and also stated that planters who cannot deliver rubber at 2d. a pound are in a difficult position, his words had an effect he could hardly have foreseen.

A flood of correspondence followed, revealing a marked animus chiefly against Sir Eric. The feeling seems to be that Dunlop, being primarily a manufacturing concern, has no real interest in Malaya. Besides the company gives nothing of its own experience in return. But what rankles most is the frequent reference to costs made by Sir Eric with what is considered undue assumption of superiority on the one hand and contemptuous disregard for the rights of the small fry, on the other.

A remarkable development, however, is the revulsion of feeling by many local planters in favor of the native producer. Hitherto regarded as a common menace of all European producers, the native now finds the tendency strong even to champion him. Evidently planters consciously or unconsciously feel that large capitalistic enterprises, ostensibly fighting against the native grower for the general good, will not stop with the native and that the latter provides a convenient foil against these powerful organizations.

This trend must provide food for much serious thought to those who argue—as many do—that in a conflict between the native and the large scientifically run European concern, the latter will prove irresistible and must inevitably be the winner; for it once more appears to indicate that when the mighty set out to conquer, they arouse unexpected forces against themselves, to their discomfort.

Recent Costs

The Dunlop statements as to costs have led to the examination of costs of other companies, and it now appears that a great number of both large and smaller companies also put out rubber at an f.o.b. cost of about 2d. a pound during 1932; some even mention all-in costs at this figure. The *Straits Times* lists a few of these concerns: Labu 2d. a pound all-in; Cheviot 2¼d. a pound all-in; Shelford 2⅜d. a pound all-in; Karak 2⅜d. all-in; London Asiatic 2⅜d. all-in; Batu Tiga 2⅛d. f.o.b.; Changkat Salak 1¾d. f.o.b.; Riverside (Selangor) 2¼d. f.o.b.; Scottish Malay 1⅞d. f.o.b.

This point brings another question to the fore: Is the very large, centrally administered, up-to-date concern really the most profitably working unit? It may be pointed out that this question will be possible to discuss more fairly when the results of the commercial tapping of the large areas of budded rubber on such estates become known. Meantime, however, it is worth noting that the cheapest and most profitably run estates during the slump have been among the smallest.

Labor Problems

Whatever costs may have been in 1932, it does not seem likely that these will be maintained for long especially on those estates where outputs are low and there is little or no budded rubber. For one thing the wage rates during 1932 were abnormal, and future calculations must consider a rise here.

The Labor Controller of Malaya, C. D. Ahearne, at a recent meeting of the Council of the Planters' Association of Malaya, said that the wage conditions prevailing when rubber fetched under 2d. a pound are no longer justifiable, and he added the warning that he would advance with vigor and determination against those areas which did not raise wages to a satisfactory level, that is a daily rate of 28 cents (Straits currency) for men and 24 cents for women, for morning work.

In view of the rising price of rubber and the rush to produce more, it is worth noting that the working population here declined from about 330,000 on January 1, 1930, to 177,000 on January 1, 1933. Many closed estates are reopening, and the competition for labor has already begun. In certain sections it is reported that coolies by the truckload are being enticed away from their estates with promises of higher rates. Other coolies are straggling over to native holdings where they also have a chance of earning more money. This condition cannot but lead to wages above those that even the controller of labor insists upon, that is, of course, provided the upward trend of rubber continues.

The shortage of labor, caused primarily by wholesale repatriation of coolies when estates closed down or cut their labor forces, while it causes difficulties both for the manager who must reopen an estate and gather together a labor force as speedily as possible and for the estates which are losing coolies to crimpers, cannot be considered an unmitigated evil if it helps to keep back some of the rubber that producers are bent on pouring into the market now. Outputs have already increased considerably, and in the face of the stocks and problematic demand, it cannot benefit planters to produce still more rubber.

Fictitious Stock Figures?

Incidentally mention must be made of a suggestion by a well-known planter that rubber statistics are being worked for the benefit of speculators, particularly American. This is not the first time that something of this kind has been said; there is always a tendency to be skeptical about America. The planter points out that not so long ago an error of about 33% was discovered in the published Malayan stock figures and a small error in United Kingdom stocks, and he has his doubts also about American stocks. He has heard direct from the United States that tire retreading shops are as plentiful all over America as beer shops in Germany.

"Is it possible," he asks, "that the parties working out statistics have only calculated the stocks by taking stocks carried forward from last month, adding imports and deducting from the total rubber delivered to the parties known as 'Rubber Goods Manufacturers,' forgetting all about the rubber consumed for retreading? It would certainly be very interesting to know, as that might put an entirely different aspect on rubber stocks held in the U.S.A."

Malayan Notes

Paper sacks as used for packing cement are suggested for packing rubber. One sack holds 112 to 120 pounds of rubber and costs 4½d.; while a wooden case holding 224 to 240 pounds costs 1s.8d. to 2s.

Rubber road tests are being conducted in Kuala Lumpur, and the first area, 396 square yards, has been laid with rubber carpets as devised by Kendall and Graham, Pinji Estate, Perak. These carpets, 3 by 27 feet, are of a special compound that will resist tropical conditions. The new mosque that has just been built at Klang, Selangor, said to be the finest in Malaya, has its central hall, an octagon 50 feet in diameter, laid with a rubber flooring.

NETHERLANDS EAST INDIES

Latex Transportation

A problem facing estates with budded areas reaching the tapping stage is transporting latex from field to factory. The usual procedure has been for each tapper, after finishing his allotted 300 to 400 trees, to go back, empty the cups into a pail, and carry the cups, tapping tools, and latex back to the factory himself. This routine is not particularly hard where the yield is about 400 pounds per acre. But on the budded estates where 2 and 3 times this amount are expected, the minimum load that a tapper is willing and able to carry is soon exceeded, and where female tappers are also employed, sooner still. The question, then, is how to handle transportation.

This problem was discussed by W. C. van Heusden at a recent Planters' Congress when he explained various ways in which this might be managed. The tapper should not be required to carry his latex at all; he should be given a helper to aid him in carrying the latex; he should carry the latex just far enough to reach a motor truck, narrow gage railway, or cableway. The last 2 methods are already in use on some estates. Any of these means involves added expense, and transportation by automobile, rail, or cableway in particular demands considerable initial outlay, from 400 to 15,000 guilders a kilometer, according to the type of transportation desired, van Heusden estimates.

In considering probable costs of producing rubber on budded areas, therefore, the item of transportation from field to factory will have to receive extra attention.

High Outputs

When some time ago a planter asked a scientist who had discussed the high yields expected from buddings whether these yields did not carry with them a menace to the industry, the answer was that the total budded area was insignificant when compared with the total area and that it would be some years before the effects of these super-outputs would be felt.

At a recent planters' meeting G. F. Hoedt, speaking on vegetative propagation of rubber and tea in the past, present, and future, suggested that planters would ask themselves whether it was wise of the Experiment Station to think of increasing outputs per unit of area in view of the already existing disequilibrium between production and consumption, and answered his own query as follows:

"If the Experiment Station is looking for means to increase output per unit of area, it is done because this increase may lead to a lowering of production costs of the product won. This is one of the many ways toward producing as good tea and rubber as possible in a manner as cheap as possible, which the station is helping to seek for.

"What areas producers wish to plant up and what amounts of the product they accordingly wish to put on the market is a question of proprietor view, and the Experiment Station stands outside of this. Nor will anyone ever be able to reproach the station with having promoted the destruction of the equilibrium between production and consumption."

In other words, having handed the Industry a 2-edged sword, Science refuses to accept any responsibility for any hurt that may result.

Export Statistics

Exports of estate rubber from the Netherlands East Indies during the first half of 1933 were 72,394 tons against 76,860 tons; but the total native rubber shipments were 42,097 against 29,218 tons. During the first 3 months of 1933 the native exports had been only 13,420 against 15,942 tons in the corresponding period of 1932. In the second quarter of 1933 the average monthly shipments were almost 10,000 tons against a little over 4,000 tons in the first quarter.

Provisional figures for July indicate a further increase; the total is 13,330 tons, almost as much as the total shipments of the first 3 months of 1933.

The Crisis Ordinances

Under the Crisis Ordinances recently passed to maintain the Experiment Stations, rubber estates in Java and South and West Sumatra will have to pay 29 cents per 100 kilograms for the required licenses; while those in North Sumatra (Atjeh, East Coast Sumatra, and Tapanoeli) pay 5 cents per 100 kilograms, the latter paying only for consumption propaganda and not for research and new uses, as do the former.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for July, 1933:

Rubber Exports: Ocean shipments from Singapore, Penang, Malacca, and Port Swettenham

To	July, 1933 Sheet and Crepe Rubber Tons	July, 1933 Latex Concentrated Latex and Revertex Tons
United Kingdom	3,790	96
United States	31,407	415
Continent of Europe	10,706	141
British possessions	1,112	16
Japan	3,845	42
Other countries	387	1
Totals	51,247	711

Rubber Imports: Actual, by Land and Sea

From	Dry Rubber Tons	Wet Rubber Tons
Sumatra	555	7,299
Dutch Borneo	584	7,341
Java and other Dutch islands	132	53
Sarawak	1,326	32
British Borneo	285	38
Burma	86	17
Siam	341	456
French Indo-China	143	26
Other countries	50	8
Totals	3,502	15,270

MAILING LISTS

Pave the way to more sales with actual names and addresses of Live prospects.

Get them from the original compilers of basic list information—up to date—accurate—guaranteed.

Tell us about your business. We'll help you find the prospects. No obligation for consultation service.

60 page Reference Book and Mailing LIST CATALOG

Gives counts and prices on 8,000 lines of business. Shows you how to get special lists by territories and line of business. Auto lists of all kinds. Shows you how to use the mails to sell your products and services. Write today.

R. L. POLK & CO.
Polk Bldg.—Detroit, Mich.
Branches in Principal Cities
World's Largest City Directory Publishers

Mailing List Compilers. Business Statistics. Producers of Direct Mail Advertising.

World Rubber Absorption—Net Imports

Consumption	Long Tons—1933 Apr.	May	June
United States	26,226	44,580	51,326
United Kingdom	7,272	7,627	4,837
Net Imports			
Australia	1,580	425	613
Austria	196	196	...
Belgium	882	710	...
Canada	555	1,704	1,441
Czechoslovakia	400	432	...
Denmark	146	170	211
Finland	61	117	87
France	6,308	4,144	4,056
Germany	4,805	4,622	3,630
Italy	2,215	1,278	...
Japan	5,495	5,289	3,330
Netherlands	163	†525	†519
Norway	92	74	...
Russia	2,274	1,691	...
Spain	281	433	541
Sweden	307	175	395
Switzerland	32	33	54
Others	*1,450	*1,450	*1,450
Totals	60,740	75,675	...
Minus U. S. (Cons.)	26,226	44,580	51,326
Total foreign	34,514	31,095	...

*Estimate to complete table.
†Indicating excess of reexports over imports.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

Patents and Trade Marks

MACHINERY

United States

1,916,258. **Tire Groover.** W. F. Errig, Philadelphia, and G. M. Pfundt, Churchville, both in Pa.

1,916,265. **Shoe Press.** E. A. Hammarsjo, Rockford, Ill.

1,916,300. **Controller.** R. D. Cleveland, assignor to Taylor Instrument Cos., both of Rochester, N. Y.

1,916,361. **Stripping Hose from Mandrel.** N. H. Curtiss, Passaic, N. J., assignor to New York Belting & Packing Co., New York, N. Y.

1,916,368. **Mold Press.** P. O. Gunkel, Welland, Ont., Canada, assignor to Joseph Stokes Rubber Co., Trenton, N. J.

1,916,422. **Tire Shaper.** A. L. Heston, Columbiana, O., assignor to United States Rubber Co., New York, N. Y.

1,916,436. **Lasting Machine.** E. L. Patten, New Haven, Conn., assignor to Boston Rubber Shoe Co., Malden, Mass.

1,916,467. **Tension Regulator.** E. Eger, assignor to Morgan & Wright, both of Detroit, Mich.

1,916,870. **Centrifugal Bowl.** G. J. Strezynski, Poughkeepsie, assignor to De Laval Separator Co., New York, both in N. Y.

1,916,885. **Emulsion Producer.** L. Kirschbraun, Leonia, N. J., assignor, by mesne assignments, to Flintkote Corp., Boston, Mass.

1,917,039. **Cleaning Molds.** P. Klein, Budapest, Hungary, and A. Szegvari, Akron, O., assignors to American Anode, Inc., Akron, O.

1,917,110. **Full Circle Retreader.** A. W. Gay, Reading, O.

1,917,261 and 1,917,262. **Tire Casing Retreader.** P. E. Hawkinson, assignor to Paul E. Hawkinson Co., both of Minneapolis, Minn.

1,917,422. **Centrifugal Bowl Arrangement.** N. E. Bergner, Stockholm, Sweden, assignor to De Laval Separator Co., New York, N. Y.

1,917,743. **Ice Bag Die.** A. D. Walker, Middleboro, Mass.

1,917,929. **Motor Mounting Pad Mold.** J. F. Duffy, assignor to Duffy Mfg. Co., both of Holland, Mich.

1,918,320. **Tire Builder.** W. H. Campbell, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,918,532. **Molding Press.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.

1,918,714. **Winding Machine.** A. F. Pym, Beach Bluff, assignor to Sibley-Pym Corp., Lynn, both in Mass.

1,918,838. **Square Tire Patch Beveler.** C. E. Dunlap, Sioux City, Iowa.

1,919,361. **Strip Rubber Former.** T. B. Farrington, Pasadena, Calif., assignor to B. F. Goodrich Co., New York, N. Y.

1,919,363. **Plastic Article Embosser.** F. D. Fowler, Newton, Mass., assignor to B. F. Goodrich Co., New York, N. Y.

1,919,374. **Plastic Article Former.** C. W. Leguillon, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,919,380. **Removing Articles from Packing Case.** J. W. Schade, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,919,384. **Tire Builder.** F. Slusher, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,919,386. **Spherical Article Striper.** C. W. Steele, deceased, by L. K. Steele, administratrix, both of Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,920,139. **Vulcanization Mold.** G. W. Crosby, Woodcliff, N. J., assignor to Bakelite Corp., New York, N. Y.

1,920,157. **Vulcanizing Press.** H. Walther, Frankfurt a. M.-Oberrad, Germany.

Dominion of Canada

331,750. **Golf Ball Mold.** H. K. B. Davis, New York, inventor, and J. N. Macy, Ossining, assignee of ½ of the interest, both in N. Y., U. S. A.

331,797. **Portable Vulcanizer.** H. G. Maclennan, St. Kilda, Australia.

331,863. **Pneumatic Tube Splicer.** Goodyear Tire & Rubber Co., assignee of J. I. Haase, both of Akron, O., U. S. A.

332,083. **Rubber-Tipped Lace Mold.** Z. Neumann and A. Ney, co-inventors, both of Budapest, Hungary.

332,112. **Vulcanizing Press.** C. Macbeth, Birmingham, England.

United Kingdom

390,284. **V-Belt Cutter.** A. R. and L. R. Telford, both of Yorkshire.

390,316. **Hollow Article Mold.** Henley's Tyre & Rubber Co., Ltd., London, and W. Childs, Gravesend.

390,397. **Tire Tester.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.

390,833. **Festooning Rack.** Firestone Tyre & Rubber Co., Ltd., Middlesex, assignee of G. B. Nichols, O. La R. Flener, and H. D. Stevens, all of Akron, O., U. S. A.

390,892. **Bias Strip Severing Machine.** Dunlop Rubber Co., Ltd., London, and H. Willshaw, H. Smith, and F. A. Davenport, all of Birmingham.

391,189. **Coating Machine.** British United Shoe Machinery Co., Ltd., and F. Ricks and G. Hazelton, both of Leicester.

391,230. **Sculpture Mold.** Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignee of Magyar Ruggyantaarugyar Reszvenytarsasag, Budapest, Hungary.

391,253. **Extruder.** T. and G. Gare, both of Stockport.

391,305. **Thread Extrusion Apparatus.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and E. A. Murphy, Birmingham.

391,550. **Boot Vulcanizer.** G. B. Laura, Varese, Italy.

Germany

580,484. **Joining Tire Ends, Etc.** H. Putsch & Co., Hagen i. Westf.

580,885. **Hose Machine.** B. F. Goodrich Co., New York, N. Y., U. S. A. Represented by G. Benjamin, Berlin-Charlottenburg.

581,289. **Vulcanizing Mold.** A. Pohl, Berlin-Lichtenrade.

581,533. **Tire Building Machine.** Deutsche Dunlop Gummi Compagnie A. G., Hanau a. M.

PROCESS

United States

1,917,548. **Endless Belt.** T. M. Russell, assignor to Russell Mfg. Co., both of Middletown, Conn.

1,917,737. **Composite Rubber Sole.** W. F. Schacht, Huntington, Ind.

1,917,755. **Rubber-Fiber Article.** B. Dewey, assignor to Dewey & Almy Chemical Co., both of Cambridge, Mass.

1,918,370. **Chlorination Products of Caoutchouc.** W. Beckmann, Tornesch, and M. Deseniss and A. Nielsen, both of Hamburg, assignors to New York Hamburger Gummi Waaren Co., Hamburg, all in Germany.

1,918,553. **Pneumatic Tire.** A. J. Musselman, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,918,671. **Rubber.** D. Spence, Forest Hills, assignor to Intercontinental Rubber Co., New York, both in N. Y.

1,918,937. **Inflated Pebbled Surface Material.** W. N. Shelton, Wellesley, Mass.

1,919,111. **Friction Disk.** R. W. Kent, Newton, Mass., assignor to Thermoid Rubber Co., Trenton, N. J.

1,919,718. **Adhering Rubber to Metal.** H. Gray, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

Dominion of Canada

331,755. **Articles from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignees of E. A. Murphy and D. F. Twiss, co-inventors, both of Birmingham, England.

331,756. **Goods from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignees of E. A. Murphy, A. Niven, and D. F. Twiss, co-inventors, all of Birmingham, England.

331,802. **Non-inflammable Rubber.** T. B. Parker, Orpington, England.

332,138. **Cardboard.** Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignee of L. Havas and E. Csutoras, co-inventors, both of Budapest, Hungary.

United Kingdom

389,993. **Doll.** Kammer & Reinhardt A. G., Thuringia, Germany.

390,779. **Cutting Bathing Caps.** Dr. Dorogi Es Tarsa Gummigyar R. T., and I. and L. Dorogi, all of Budapest, Hungary.

391,266. **Linoleum.** F. Reddaway, Lancashire.

391,309. **Cutting Rubber.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss, W. McCowan, and A. Lakeman, all of Birmingham.
391,511. **Goods from Rubber Dispersions.** S. Kay & Co., Ltd., and W. Kay, both of Bury.

Germany

580,164. **Rubberizing Cord Fabric.** Gummiwerke Fulda A. G., Fulda.
580,205. **Brassiere.** Radium-Gummiwerke m.b.H., Koln-Dellbruck.
580,267. **Aqueous Rubber Dispersions.** Anode Rubber Co., (England) Ltd., London, England. Represented by R. and M. M. Wirth, C. Weihe, and H. Weil, all of Frankfurt a. M., and T. R. Koehnhorn, Berlin.
580,350. **Rubber Objects.** Metallic Ink & Dye Co., Ltd., London, England. Represented by R. David, Berlin.
581,073. **Rubber Thread Brushes.** P. Korten, Bad Godesberg.
581,949. **Aqueous Dispersions.** Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by C. Wiegand, Berlin.

CHEMICAL

United States

1,916,285, 1,916,286, and 1,916,287. **Antiager.** M. C. Reed, S. Charleston, W. Va., assignor to B. F. Goodrich Co., New York, N. Y.
1,916,421. **Rubber Cement.** E. Hazell, New York, N. Y., assignor to Naugatuck Chemical Co., Naugatuck, Conn.
1,917,804. **Accelerator.** G. L. Magoun, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.
1,918,328. **Accelerator.** H. L. Fisher, Leonia, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.
1,918,403. **Processing Lubricants.** F. A. Kormann, Glendale, and J. A. Milliff, Compton, assignors to B. Vale, San Francisco, all in Calif.
1,918,466. **Synthetic Rubber.** T. Goost, Leverkusen a. Rhine, assignor to I. G. Farbenindustrie A. G., Frankfurt a. M., both in Germany.
1,918,589. **Fumigating Agent.** B. R. Burgess, Glendale, Calif.
1,918,893. **Sponge Rubber.** H. Beckmann, Berlin-Zehlendorf, Germany.
1,918,971. **Insulation Compound.** A. R. Kemp, Westwood, and J. H. Ingmanson, Bloomfield, both in N. J., assignors to Bell Telephone Laboratories, Inc., New York, N. Y.
1,919,301. **Antioxidant.** H. A. Morton, Akron, O.
1,919,452. **Age Resister.** W. L. Semon, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,919,714. **Insoluble Pigment.** H. A. Endres, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,919,715. **Insoluble Pigment Dispersions.** H. A. Endres, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,919,726. **Age Resister.** P. C. Jones, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,919,766. **Age Resister.** C. L. Beal, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,919,775. **Aqueous Dispersions.** R. A. Crawford and F. K. Schoenfeld, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

Dominion of Canada

331,653. **Synthetic Rubber.** I. G. Farbenindustrie A. G., Frankfurt a. M., assignee of H. Hopff, Ludwigshafen a. Rhine, and E. Kuehn, Mannheim, co-inventors, all in Germany.
331,862. **Coating Composition.** Goodyear Tire & Rubber Co., assignee of R. C. Bateman, both of Akron, O., U. S. A.
331,864. **Accelerator.** Goodyear Tire & Rubber Co., Akron, O., assignee of J. Teppema, Wayne, N. J., both in the U. S. A.
332,017. **Accelerator.** Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of M. H. Zimmermann, Westbrook, Me., U. S. A.
332,059. **Rubber Composition.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignees of E. A. Murphy, F. T. Purkis, and D. F. Twiss, co-inventors, all of Birmingham, England.

United Kingdom

389,720. **Composition Fuel.** R. P. Browning, Selangor, F. M. S.
390,189. **Composite Building Slab.** N. M. Elias, New York, N. Y., U. S. A.
390,498. **Abrasive Composition.** Carborundum Co., Ltd., Manchester, assignee of S. A. Coulter, Dusseldorf, Germany.
390,526. **Leather Substitute.** J. S. Campbell, Surrey.
390,531 and 390,532. **Rubber Composition.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss and F. A. Jones, both of Birmingham.
390,534. **Plastic Composition.** Deutsche Hydrierwerke A. G., Berlin, Germany.
390,628. **Coated Fabric.** Imperial Chemical Industries, Ltd., London. (E. I. du Pont de Nemours & Co., Wilmington, Del., U. S. A.)
390,820. **Rubber Composition.** H. P. Stevens and Clayton & Stevens, Ltd., both of London.
390,844. **Leather Substitute.** J. S. Campbell, Surrey.
390,932. **Attaching Rubber to Metal.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss, J. A. Wilson, and A. E. T. Neale, all of Birmingham.
391,031. **Latex.** J. Duarry-Serra, Barcelona, Spain.
391,115. **Rubber Composition.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss, Birmingham.
391,120. **Accelerator.** A. Carpmael, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)
391,122. **Accelerator.** Rubber Service Laboratories Co., Akron, O., assignee of R. L. Sibley, Nitro, W. Va., both in the U. S. A.
391,484. **Lubricant.** F. Frieg, Buckinghamshire.
391,510. **Age Resister.** Electrical Research Products, Inc., New York, N. Y., assignee of A. R. Kemp, Westwood, and J. H. Ingmanson, Bloomfield, both in N. J., all in the U. S. A.

Germany

580,126. **Varnishes.** J. Scheiber, Leipzig.
580,165. **Microporous Rubber.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by C. Wiegand, Berlin.
580,349. **Stabilizing Rubber Dispersions.** Naamlooze Vennootschap De Bataafsche Petroleum Mij., The Hague, Holland. Represented by H. Mortensen, Berlin.
580,540. **Improving Polymerization Products of Butadiene Hydrocarbons.** I. G. Farbenindustrie A. G., Frankfurt a. M.
580,886. **Producing Vulcanized Rubber.** Carbonfix Societe Anonyme, Paris, France. Represented by F. Meffert and L. Sell, both of Berlin.
581,357. **Latex Waterglass Cement.** Metallgesellschaft A. G., Frankfurt a. M.

GENERAL

United States

1,916,264. **Heel.** M. H. Grant, Los Angeles, Calif.
1,916,393. **Pulp Screen Plate.** R. W. Smith, Walpole, Mass.
1,916,428. **Syringe.** N. Kovacs, Vienna, Austria.
1,916,454. **Offset Press.** O. Wohlrabe, Plauen, Germany.
1,916,461. **Tread Member.** B. Bronson, Lakewood, assignor to Ohio Rubber Co., Cleveland, both in O.
1,916,483. **Inflatable Article.** O. Krichbaum, Delaware, O.
1,916,527. **Balloon.** F. B. Pastir, New York, N. Y.
1,916,640. **Hospital Sheeting.** S. H. Rubin, Brookline, and J. J. Clifford, Reading, both in Mass.
1,916,733. **Mattress Tuft Slip-Under Button.** C. A. Light, Brooklyn, N. Y.
1,916,839. **Milking Machine Teat Cup.** J. L. Hulbert, Poughkeepsie, assignor to De Laval Separator Co., New York, both in N. Y.
1,916,856. **Clothespin.** L. G. Copeman, assignor to Copeman Laboratories Co., both of Flint, Mich.
1,916,857. **Closure Member.** L. G. Copeman, assignor to Copeman Laboratories Co., both of Flint, Mich.
1,916,858. **Milling Machine.** T. Earle, Denver, Colo.
1,916,935. **Ball Valve.** O. A. Savaria, Chicopee, Mass., assignor to A. G. Spalding & Bros., New York, N. Y.
1,916,937. **Conductor Cord Slack Take-up.** C. Schlaburg, Akron, O.
1,916,967. **Flexible Coupling.** G. H. Curtiss, Country Club Estates, assignor, by mesne assignments, to Curtiss Aerocar Co., Inc., Opa Locka, both in Fla.
1,917,078. **Aircraft Landing Gear.** T. P. Wright, Port Washington, and R. R. Osborn, Garden City, both in N. Y., assignors to Curtiss Aeroplane & Motor Co., Inc., a corporation of N. Y.
1,917,143. **Drill Cable Snap.** D. C. Moffett, Logan, O.
1,917,499. **Tire Valve.** W. T. Conrad, Lawndale, Calif.
1,917,534 and 1,917,535. **Inflatable Ball.** J. E. Maynard, assignor to Draper-Maynard Co., both of Plymouth, N. H.
1,917,795. **Golf Club.** E. Fetter, Baltimore, Md.
1,917,797. **Pivotal Connection.** H. C. Harris; A. H. Harris, administratrix of said H. C. Harris, deceased, assignor, by mesne assignments, to First Central Trust Co., as trustee, all of Akron, O.
1,917,908. **Lady's Undergarment.** C. Stolz, Dayton, O.

1,917,977. **Comic Strip Display Device.** F. N. Kalert and J. Suda, both of St. Louis, Mo.
1,917,993. **Brake Element.** F. C. Morris, San Francisco, Calif.
1,918,035. **Tire Pressure Indicator.** J. H. Hardy, Crawford, Miss.
1,918,055. **Water Marking Device.** W. J. Pippert, Ridlonville, Me.
1,918,134. **Closure Packing.** T. Resch, assignor of ¼ to S. A. Frick, both of Rockwell City, Iowa.
1,918,135. **Article of Manufacture.** T. Resch, assignor of ¼ to S. A. Frick, both of Rockwell City, Iowa.
1,918,239. **Fountain Pen.** L. H. Ashmore, Collingswood, assignor, by direct and mesne assignments, to Esterbrook Steel Pen Mfg. Co., Camden, both in N. J.
1,918,276. **Electrically Warmed Shoe.** W. W. Lillard, Mahwah, N. J.
1,918,506. **Musical Instrument Pad.** W. C. Weeks, Toronto, Ont., Canada.
1,918,517. **Printer's Blanket.** W. C. Calvert, assignor to Goodyear Tire & Rubber Co., both of Akron, O.
1,918,521. **Dental Brush.** E. L. Chott, Chicago, Ill.
1,918,524. **Resilient Container.** B. C. Eberhard, assignor to Goodyear Tire & Rubber Co., both of Akron, O.
1,918,533. **Electric Connecter Plug.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.
1,918,539. **Tire Bead Structure.** G. A. Handy, assignor to Goodyear Tire & Rubber Co., both of Akron, O.
1,918,611. **Squeegee.** J. M. Oberti, San Francisco, Calif.
1,918,633. **Nipple.** W. A. Carstensen, Winthrop, Mass.
1,918,639. **Shoe Antislip Attachment.** I. S. Greentree, Richmond, Va.
1,918,652. **Yielding Stop.** E. R. Marbach, Cleveland, O.
1,918,686. **Vacuum Cup.** G. W. Bungay, Plainfield, N. J., assignor, by mesne assignments, to Household Field Corp., New York, N. Y.
1,918,718. **Dart.** N. E. Samsel, Oakland, Calif.
1,918,743. **Valve Grinder.** F. H. Etzenhouser, R. C. Murphy, and F. P. Tandy, all of Independence, Mo.
1,918,786. **Fruit Jar Cap.** A. L. Schram, Hillsboro, Ill.
1,918,844. **Fountain Pen.** E. Hugetz, New York, N. Y.
1,919,032. **Inflatable Garment.** J. Neulander, New York, N. Y.
1,919,261. **Corset and Brassiere.** C. H. Schopbach, assignor to International Corset Co., both of Aurora, Ill.
1,919,292. **Elastic Garment.** J. Field, Fairfield, assignor to Warner Brothers Co., Bridgeport, both in Conn.
1,919,293. **Corset.** J. Field, Fairfield, assignor to Warner Brothers Co., Bridgeport, both in Conn.
1,919,299. **Stocking Supporter.** N. D. Levin, Columbus, O.
1,919,326. **Automobile Accessory.** W. R. Gallagher, Jr., and W. Le R. Lloyd, both of Houtzdale, Pa.
1,919,356. **Hose.** G. K. Bedur, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,919,357. **Ball.** J. D. Beebe, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,919,366. **Acid Container Lining.** W. T. Haines, Stow, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,919,368. **Tire Patch.** W. H. Hodgson, Moose Jaw, Sask., Canada.
1,919,375. **Rubber Bearing Structure.** A. D. Maclachlan and K. E. Freund, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.
1,919,484. **Shock Insulator.** C. Saurer, assignor to Firestone Tire & Rubber Co., both of Akron, O.
1,919,537. **Nipple.** A. J. Stock, Jr., Cleveland, O.
1,919,571. **Massage Device.** J. H. Pinkston, Tulsa, Okla.
1,919,677. **Protected Metal Article.** J. H. Young, assignor to H. H. Robertson Co., both of Pittsburgh, Pa.
1,919,733. **Cowl Ventilator.** S. H. H. Kuenzel, assignor to Checker Cab Mfg. Corp., both of Kalamazoo, Mich.
1,919,859. **Dispensing Cap.** N. C. Phillips, assignor to Russia Cement Co., both of Gloucester, Mass.
1,919,865. **Dish Scraper.** C. A. Schacht, Huntington, Ind.
1,919,866. **Jar Opener.** C. A. Schacht, Huntington, Ind.
1,919,910 and 1,919,911. **Tire and Rim.** A. H. Shoemaker, Seattle, Wash.
1,920,007. **Refrigerator Door Frame.** K. J. Durant and C. F. Hilldring, both of Akron, O., assignors to American Hard Rubber Co., New York, N. Y.
1,920,057. **Composite Mat.** B. Bronson, assignor to Ohio Rubber Co., both of Cleveland, O.
1,920,058. **Rubber Stamp.** F. L. Buck, Freeport, N. Y.
1,920,110. **Rubber Stamp.** A. W. Schmidt, Spring Valley, N. Y.
1,920,112. **Spring Heel Seat.** W. S. Shaft, Faribault, Minn.

Dominion of Canada

331,567. **Tire Alarm.** H. S. Christophersen, Odense, Denmark.
331,578. **Toy.** A. Goulet, Toronto, Ont.
331,587. **Elbow Beautifying Pad.** M. Lafferty, Belleville, Ont.
331,611. **Fountain Pen.** J. Wallace, Cedarhurst, N. Y., U. S. A.
331,651. **Pulp Refiner.** Dominion Engineering Works, Ltd., Lachine, assignee of H. G. Welsford and A. N. Russell, co-inventors, both of Montreal, all in P. Q.
331,656. **Electrical Conductor.** General Cable Corp., New York, assignee of H. F. Bower, Rome, both in N. Y., U. S. A.
331,739. **Telephone Receiver.** Western Electric Co., Inc., New York, N. Y., assignee of N. Blount, Maplewood, N. J., both in the U. S. A.
331,745. **Cable.** Western Electric Co., Inc., New York, N. Y., assignee of O. S. Markuson, Hilton, N. J., both in the U. S. A.
331,769. **Upholstery Filling.** H. L. Davies, Guelph, and L. Miller, Toronto, co-inventors, both in Ont.
331,779. **Bathing Cap.** A. T. Dawzda, Weyburn, Sask.
331,806. **Door Antirattler.** O. C. Ritz-Woller, Chicago, Ill., U. S. A.
331,813. **Internal Bath Apparatus.** C. P. Stoughton, Edmonton, Alta.
331,865. **Dual Wheel.** Goodyear Tire & Rubber Co., assignee of A. W. Woodward, both of Akron, O., U. S. A.
331,866. **Tire Bead.** Goodyear Tire & Rubber Co., assignee of G. A. Handy, both of Akron, O., U. S. A.
331,944. **Pneumatic Upholstered Mattress.** A. J. Flynn, Toronto, Ont.
332,053. **Electrical Conductor.** Standard Underground Cable Co. of Canada, Ltd., assignee of T. D. Waring and J. Bolingbroke, co-inventors, all of Hamilton, Ont.
332,098. **Nursing Bottle Outfit.** L. Fort, Atlanta, Ga., U. S. A.
332,151. **Engine Mounting.** Chrysler Corp., assignee of R. K. Lee, both of Highland Park, Mich., U. S. A.
332,181. **Elastic Horseshoe.** Imperator Hestesko Aktieselskap, Tönsberg, Norway, assignee of O. Harsem, Paris, France.
332,200. **Wheel.** Sanmarti y Comas de Argemir, Sociedad Limitada, assignee of T. S. Martinez, both of Barcelona, Spain.
332,210. **Pipe Joint.** Victaulic Co., Ltd., London, assignee of P. G. Johnson, Letchworth, both in England.

United Kingdom

389,270. **Endless Tread.** H. Reid, Glasgow, Scotland.
389,272. **Gramophone Pick-Up.** E. E. Symonds, Walton-on-Thames.
389,304. **Endless Vehicle Track.** Ansaldo Soc. Anon., Genoa, Italy.
389,523. **Hair Curler.** P. Sartory, London.
389,607. **Road.** W. J. Waterer, London.
389,848. **Air Mattress.** S. Mangold, Vienna, Austria.
389,918. **Stair Carpet Fastener.** A. Clay and J. C. Wicker, both of Birmingham.
390,074. **Ball Game Practicing Device.** H. G. Twist, Coventry.
390,098. **Waste Outlet Fitting.** Smith & Davis, Ltd., and H. F. Smith, both of Birmingham.
390,143. **Bottle Washing Brush.** R. Escofet, Tarragona, Spain.
390,172. **Hair Curler.** W. G. Shelton, St. Louis, Mo., U. S. A.
390,197. **Universal Joint.** N. B. Newton, London.
390,239. **Cable.** Johnson & Phillips, Ltd., and A. P. Pyne, both of London.
390,262. **Vehicle Driving Gear.** D. M. Kan, Hilversum, and F. A. Drieman, Amsterdam, both in Holland.
390,328. **Card Dealer.** L. A. Lux, Lakewood, and H. G. Tremmel, Cleveland, both in O., U. S. A.
390,340. **Driving Belt.** J. & A. Hillman, Ltd., Worcestershire, and A. H. Surman, Birmingham.
390,393. **Pile Fabric.** Synthetic Fur Mills Corp., New York, N. Y., U. S. A.
390,401. **Horseshoe.** P. Gibney, Kells, Co. Meath, Irish Free State.
390,424. **Exercising Apparatus.** C. Arnold, London. (Steelflex Corp., Cleveland, O., U. S. A.)
390,453. **Hot Water Bottle.** I. and L. Dorogi and Dr. Dorogi Es Tarsa Gummigyar R. T., all of Budapest, Hungary.
390,475. **Hot Water Bottle Stopper.** A. D. Ingram and E. J. Everest, both of London.
390,539. **Hair Waver.** H. C. and M. A. Fraser, both of Bournemouth.
390,555. **Springs.** G. Spencer, Moulton & Co., Ltd., and A. Spencer, both of Westminster.
390,571. **Cable.** A. W. Williams, Nottinghamshire.
390,585. **Fountain Pen.** E. S. Sears, Surrey, and Mabie, Todd & Co., Ltd., London.
390,586. **Paper Sheet Joiner.** W.

Fletcher and A. Fuchs, both of London.

390,602. **Hair Net.** Byard Mfg. Co., Ltd., Nottingham, and A. E. Hunter, Nottinghamshire.

390,615. **Motor Mounting.** G. Spencer, Moulton & Co., Ltd., and R. T. Glascodine, both of Westminster.

390,633. **Springs.** G. Spencer, Moulton & Co., Ltd., and A. Spencer, both of Westminster.

390,677. **Saddle.** L. O. Illsley, Rutland.

390,679. **Elastic Yarn.** O. H. Walton, Needham Heights, Mass., U. S. A.

390,690. **Swimming Bladder.** O. Wehrle, Baden, Germany.

390,770. **Motor Cycle Mounting.** Fichtel & Sachs A. G., Schweinfurt, Germany.

390,919. **Composite Bag Seam.** W. W. Rowe, Cincinnati, O., U. S. A.

390,997. **Elastic Fabric.** F. Nell (trading as Plutte, Koecke & Co.), Barmen, Germany.

391,068. **Dialysis Apparatus.** A. J. S. Hooton, Essex, and S. H. Johnson & Co., Ltd., London.

391,086. **Springs.** G. Spencer, Moulton & Co., Ltd., and A. Spencer, both of Westminster.

391,139. **Gramophone Pick-Up.** Electrical Research Products, Inc., New York, assignee of J. H. King, Amityville, both in N. Y., U. S. A.

391,219. **Aerial.** Marconi's Wireless Telegraph Co., Ltd., London, and H. A. Ewen, Essex.

391,287. **Paint Brush.** Beechwood, Ltd., and E. A. Wilcock, both of Buckinghamshire.

391,418. **Phonographic Reproducer.** Naamlooze Vennootschap Philips' Gloeilampenfabrieken, Eindhoven, Holland.

391,471. **Vehicle Spring Suspension.** A. Neiman, Cologne, Germany.

391,500. **Game of Chance.** A. E. Voss, London.

391,504. **Table Football Game.** B. F. Lee, Manchester.

391,623. **Vehicle Opening Top.** W. Baier, Munich, Germany.

Germany

580,948. **Block Belt.** L. Rado, Berlin.

581,529. **Suction Device.** J. Neidhart, Munich.

581,546. **Protective Tire Insert.** J. Steiner, Thun, Switzerland. Represented by H. Barschall, Berlin-Charlottenburg.

581,932. **Inflatable Body.** I. and L. Dorogi, and Dr. Dorogi & Co. Gummifabrik A. G., all of Budapest-Albertfalva, Hungary. Represented by E. Boas, Berlin.

TRADE MARKS

United States

304,366. Symmetrical shield containing a diamond and the word: **"Jenkins."** Washers, gaskets, and packings. Jenkins Bros., New York, N. Y.

304,367. Symmetrical shield. Washers, gaskets, and packings. Jenkins Bros., New York, N. Y.

304,395. Design simulating a retort. Adhesive. Naugatuck Chemical Co., New York, N. Y.

304,397. **Super Floater Whipcord.** Tires. Western Auto Supply Agency of Los Angeles, Los Angeles, Calif.

304,417. Label containing the words: **"made in france. Lucile Paray, 8, Place De La Madeleine, Paris."** Wearing apparel including raincoats. Société Anonyme Lucile Paray, Paris, France.

304,533. **Anotex.** Surgeon's gloves. American Anode, Inc., Akron, O.

304,534. **Anode.** Surgeon's gloves. American Anode, Inc., Akron, O.

304,536. **Anodex.** Surgeon's gloves. American Anode, Inc., Akron, O.

304,537. **Spheron.** Carbon black. Godfrey L. Cabot, Inc., Boston, Mass.

304,543. Label containing representation of a tower and the word: **"Defender."** Household gloves. United Drug Co., Boston, Mass.

304,561. **Akromats.** Floor coverings and mats. Buxbaum Co., Akron, O.

304,588. **BraForm.** Brassieres with and without dress shields. I. B. Kleinert Rubber Co., New York, N. Y.

304,604. Words: **"Jay Bee,"** between these words appears a circle containing the initial **"J,"** representation of a bee, and a diamond containing the words: **"'Jay Bee.'"** Rubber, vegetable, and synthetic gums. Jaburg Bros., Inc., New York, N. Y.

304,646. Representation of a wolf's head and the words: **"Husky Brand."** Sporting goods. Draper-Maynard Co., Plymouth, N. H.

304,651. **Anotex.** Balloons. American Anode, Inc., Akron, O.

304,652. **Anode.** Balloons. American Anode, Inc., Akron, O.

304,654. **Anodex.** Balloons. American Anode, Inc., Akron, O.

304,702. **Paralac.** Rubberized fabrics. Haartz-Mason-Grower Co., Watertown, Mass.

304,719. Black semi-circle containing representation of a child showing a rug cushion and the words: **"Rug Cushion. Even Baby Can Tell You!"** Floor coverings. Allen Industries, Inc., Detroit, Mich.

304,791. Representation of a rug and the word: **"Ruglock."** Compounded latex sizing for backs of rugs, mats, and woven fabrics. American Curatex Corp., Quincy, Mass.

304,866. **Tru-Tite.** Bottle stoppers. E-Z Tite Rubber Co., Seattle, Wash.

304,870. Representation of a doe and the words: **"Doe Tex."** Rubberized fabric. E. I. du Pont de Nemours & Co., Wilmington, Del.

304,893. Representation of a map of the United States and the word: **"Allstate."** Gaskets, hose, belting, and brake lining. Sears, Roebuck & Co., Chicago, Ill.

304,964. **Fli-Back.** Toy. R. M. Gibson, doing business as Fli-Back Co., High Point, N. C.

304,969. **Sock-It.** Toy. R. M. Gibson, doing business as Sock-It Co., High Point, N. C.

305,006. **Jozite.** Mineral pigments for use in manufacturing rubber, etc. St. Joseph Lead Co., New York, N. Y.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

No.	Commodity	City and Country
‡5,051	Druggists' sundries....	Curacao, Netherland West Indies
‡5,070	Tires	Kaunas, Lithuania
‡5,075	Bathing caps and rubberized raincoat fabric.	Buenos Aires, Argentina
*5,166	Hose	The Hague, Netherlands
*5,193	Bicycle tires and tubes.	Kingston, Canada
†5,211	Battery cases	Buenos Aires, Argentina
†5,222	Rubber mill machinery.	Surabaya, Java
*5,229	Automobile tires and tubes	Windsor, Canada
†5,235	Friction and rubber tape, shoe soles, and corsets and elastic fabrics...	Istanbul, Turkey
*5,257	Rubber extruding machines	Leyland, England
†5,259	Druggists' sundries ...	Rio de Janeiro, Brazil
†5,266	Rubber goods	San Jose, Costa Rica
*5,281	Elastic webbing	Teheran, Persia
‡5,282	Rubberized waterproof cloth	Bombay, India
‡5,284	Druggists' sundries ...	Medan, Sumatra
‡5,332	Druggists' sundries ...	Rio de Janeiro, Brazil
‡5,422	Automobile accessories, tires, and sanitary and household articles ...	Arnhem, Netherlands
‡5,439	Druggists' sundries ...	Izmir, Turkey

*Purchase. †Purchase or agency. ‡Purchase and agency.

Plantation Rubber Crop Returns by Months

1933	Borneo (26 Companies) Long Tons	Index	Ceylon (102 Companies) Long Tons	Index	India and Burma (21 Companies) Long Tons	Index	Malaya (338 Companies) Long Tons	Index	Netherlands East Indies—Java (60 Companies) Long Tons	Index	Sumatra (60 Companies) Long Tons	Index	Miscellaneous (8 Companies) Long Tons	Index	Total (615 Companies) Long Tons	Index
January	360	73.6	1,124	55.1	120	21.4	12,450	100.1	2,556	97.3	3,837	95.2	124	68.5	20,571	92.0
February	323	66.1	905	44.3	46	8.2	11,613	93.4	2,698	102.7	4,207	104.3	54	29.8	19,846	88.7
March	314	64.2	992	48.6	126	22.4	10,492	84.4	2,752	104.8	4,143	102.8	93	51.4	18,912	84.6
April	300	61.3	1,242	60.9	139	24.7	10,518	84.6	2,864	109.1	3,824	94.8	121	66.9	19,008	85.0
May	327	66.9	891	43.7	117	20.8	11,697	94.1	3,024	115.2	4,138	102.6	135	74.6	20,329	90.9
June	328	67.1	1,013	49.6	40	7.1	12,337	99.2	2,929	111.5	4,217	104.6	136	75.1	21.000	93.9
6 months ending June,																
1933	1,952	...	6,167	...	588	...	69,107	...	16,823	...	24,366	...	663	...	119,666	...
1932	1,946	...	6,605	...	726	...	74,673	...	15,646	...	25,480	...	976	...	126,052	...

NOTE: Index figures throughout are based on the monthly average for 1929=100. Issued July 25, 1933, by the Commercial Research Department, The Rubber Growers' Association, Inc., London, England.

Market Reviews

CRUDE RUBBER

THE 2 bright spots in the rubber picture are the consumption figures and the high rate of automobile production and sales. The dark, or dubious spots, are the delay on restriction and the heavy output of raw rubber, principally by natives.

Automobile production this year has reversed the usual seasonal trend for the summer, and plants have been increasing production in July and August when they usually curtail or stop altogether. Consumer interest has been so good that manufacturers have deferred their plans for new car models.

Tire men are doing well also, but the June figures were not up to the high estimates made before official statistics were released. June shipments were 21.7% above the month before, but 37.4% less than for June, 1932. Tire men, however, are confident that more profitable business at least is here. At the end of July they increased prices 10%, now, at the end of August, another rise is expected, the fourth since spring. Raw materials are higher, labor is more expensive; and if restriction is effective and anything happens to increase cotton prices, tire manufacturers' costs will go higher.

Restriction has been a dead issue this month, following the announcement that the failure of Indo-China to fall in with the Dutch and British planters had halted negotiations for a time. But since controlled French output is only 14,000 tons a year, plans are expected to go ahead. On August 24 a London cable read that the British and the Dutch governments were in accord and that it remained for the natives to fall in line. Discouraged commentators who predicted that higher consumption and prices nullified the need of restriction forgot that production in the Far East has been at a high level ever since prices rose above 3¢. With 326,609 tons of rubber in the United States, and output continuing, there is every reason for a restriction plan.

In the Outside Market dealers in actuals feel confident that it is only a question of time before the rubber growers will get together and pull themselves out of the over-production morass.

Business in actuals was fairly good last month. Consumption of 50,000 tons for 2 months in a row and 40,000 estimated for August means that manufacturers have 140,000 tons of rubber to replace. Should manufacturers get the idea that restriction is certain, or should it be announced suddenly, dealers predict a large rush of buying orders.

RUBBER BULL POINTS

1. **July consumption of crude rubber in the United States was 50,184 tons, a drop of 2.2% under this June, but 67.4% higher than last July.**
2. **For the first 7 months output by members of the National Automobile Chamber of Commerce was 983,683 cars, against 977,134 in the entire 12 months of 1932.**
3. **Production of automobiles in August is put at 200,000 units, and for the year at 1,800,000. Last August's output was 94,392 and last year's 1,432,494.**
4. **July registrations of automobiles in the first 16 states was 86.2% higher than those last July.**
5. **Production of pneumatic casings in June was 17.5% above May and 8.1% higher than June, 1932.**
6. **Traders believe it is only a question of time before a restriction plan will be forthcoming.**
7. **Another rise in tire prices seems imminent.**

RUBBER BEAR POINTS

1. **July imports of crude rubber gained 94.9% over June and 42.5% over July, 1932.**
2. **July 31 domestic stocks were 326,609 long tons, only 2.2% under June's, and 2.1% under those of July, 1932.**
3. **Crude rubber afloat for the United States on July 31 was 57,435 long tons, against 37,894 a year ago.**
4. **Dealers' stocks in Malay on July 31 were 42,594 tons against 39,965 at the end of June and 20,026 on July 31, 1932. Port stocks were 12,586 against 4,408.**
5. **Malay shipments in July were 51,958 tons, against 41,411 for June and 40,723 for July, 1932.**
6. **Shipments of pneumatic casings in June were 21.7% higher than in May, but 37.4% below June, 1932.**
7. **Native production has increased heavily with the upturn in prices.**

Week ended July 29. The largest day's trading was 10,750 long tons, the smallest 6,560, so that the volume was considerably lower than it has been in the last 2 weeks. After the recent break in prices, more caution was evident and speculators not so active. The market was traded up more than 1½¢ in the first half of the week on cable advice that a restriction announcement would be forthcoming Thursday. But no statement was issued. The market lost the early advance and closed quietly, down from 10 to 40 points.

September closed at 7.00¢, compared with 7.10¢ the week before; December 7.52 against 7.82; January 7.60 against 7.95; March 7.75 against 8.15; May 8.00 against 8.20.

Far Eastern statistics showed that production on large and small estates in June was 39,552 tons, compared with 37,793 in May. Estate stocks were 19,385 at the month-end, against 18,331 the month before, and dealers' stocks were 21,736 tons against 21,299.

On July 26 tire manufacturers announced a 10% increase in the prices of tires and tubes, the third since May 1. Moreover, it was felt that on August 1, when a 4% processing tax becomes effective on cotton, another advance will be warranted.

When the market turned soft, factory buyers came into the Outside Market in good volume. The expectation of a restriction announcement which would probably increase prices, made buyers protect themselves. It was a good week, turning quiet on Saturday.

August-September ribbed smoked sheets closed at 7⅛¢, compared with 7⅝ last week; October-December, 7¼ against 7⅞; January-March 7½ against 8⅛; and April-June 7¾ against 8⅜.

Week ended August 5. Compared with last month, trading was light this week but prices managed to show a gain on support from commission houses. The Commodity Exchange, Inc., was closed Saturday, and on Friday with only 2,780 tons traded, prices suffered the only decline of the week of 20 to 35 points on evening up operations over the extra recess. Strength was lent to the market when reassurance was received that the government had not abandoned its inflation program as had been suggested earlier. Malayan statistics showed high shipments but they were expected and discounted in advance.

Gains totaled 63 to 70 points for the week. September closed at 7.65¢, compared with 7.00¢ the week before; December 8.18 against 7.52; January 8.25 against 7.60; March 8.41 against 7.75; and May 8.63 against 8.00.

July shipments from Malay were 51,958 tons, compared with 41,411 for June, and 40,723 for July, 1932. Since prices rose from 60 to 67 points after this report was received it was evident that the large increase had been expected.

Restriction seems to have run into difficulties, and opposition developed to a plan for 30% reduction of 1929 acreage. The present efforts have tried the patience of all observers, but there is still a strong feeling that a plan will be developed before the end of this year. The Malay figures are a strong argument for curtailment of output.

At this season of the year automobile production usually drops sharply. But last week output reached the highest level so far this year. Actual production was 64,425 units, compared with 63,137 in the previous week, and 34,465 for the same week last year, according to Cram's Automotive Reports. The index of *The New York Times* reached 78.5 for the July 29 week, against 70.0 in the previous week, and 29.1 for the 1932 week. July sales are expected to reach 165,000 units, with sales for the first 6 months slightly above the similar period last year.

Rubber manufacturers as a whole are enjoying good business and with the takings of automobile and tire manufacturers, trading in the Outside Market has been active. Manufacturers are maintaining their inventories where possible and buying their current needs in the market.

Prices in the actuals market gained ground this week. September ribbed smoked sheets were quoted at 7⅝¢, compared with 7⅛¢ the week before; October-December 7¾ against 7¼; January-March 8 against 7½; and April-June 8¼ against 7¾. There was no market in actuals Saturday with the Exchange closed and a holiday in Singapore.

Week ended August 12. London and Singapore were closed for the first 2 days of this week, making a dull opening here. Only 1,960 tons were traded Monday in a dull market. The foreign markets reopened lower, but the rate of trading picked up and losses about cancelled gains for the week.

At the close of the week prices were from 3 to 5 points lower. December closed at 8.13¢, compared with 8.18¢ the week before; January 8.22 against 8.25; March 8.38 against 8.41; and May 8.60 against 8.63.

The Exchange was closed again this Saturday, and the Board of Governors decided to limit a day's fluctuations to 2¢ on either side of the market instead of the previous limit of 3¢.

August production has at last succumbed to the seasonal decrease and *The New York Times'* index stood at 69.8 for the August 5 week, compared with 78.8 in the preceding week and 27.3 in the same week last year.

The actuals market was dull and quiet last week. Traders in the Outside Market made many inquiries, but business did not follow. With the paucity of news, there is a tendency to wait for developments that will indicate a definite market trend. Prices were lower and quoted on a nominal basis at the close on Friday.

September ribbed smoked sheets were 7¼ against 7⅝ the week before; October-December 7½ against 7¾; January-March 7¾ against 8; and April-June 8 against 8¼.

Week ended August 19. The consumption report was more favorable than expected for July, but the rubber market sold off, when it was released, due to a sharp decline in grains which sent other commodity markets off. Outside markets were the chief influence on rubber during the week. The most active day was Wednesday when 6,200 tons were traded and prices broke 50 points, only to recover the next day with sales of 4,370 tons. Both days were influenced by the break and the recovery in grains. For the week net losses in the rubber market were 42 to 47 points.

September closed at 7.15¢, compared with 7.57¢ the week before; December 7.66 against 8.13; January 7.76 against 8.22; March 7.95 against 8.38; May 8.17 against 8.60; and July 8.37 against 8.80. These quotations are from Friday to Friday, the Exchange being closed on Saturday.

July consumption was 50,184 long tons, compared with 51,326 in June, a decline of 2.2%, but a jump of 67.4% over July, 1932.

Imports were 44,290 tons, 94.9% greater than in June and 42.5% greater than in July, 1932. Domestic stocks on July 31 were 326,609 tons, against 333,954 on June 30. Rubber afloat for the United States on July 31 was 57,435 long tons, against 63,608 on June 30 and 37,894 on July 31, 1932.

Figures for pneumatic casings in June did not show up so well as expected. Shipments were 6,305,454 casings, 21.7% higher than in May, but 37.4% less than in June, 1932. Production was 6,099,924 casings, 17.5% above May, and 8.1% above June, 1932. Stocks on hand were 6,614,940, a drop of 2.1% from May 31, but 32.3% above June 30, 1932, stocks.

Automobile output for the August 7 week, according to Cram's Automotive Reports was 53,867 units, against 57,017 the week before and 20,766 in the same week a year ago. Automobile registrations of new cars in 16 states showed sales of 54,302 cars, according to R. L. Polk & Co., which is 86.2% higher than the registrations in the same period last year.

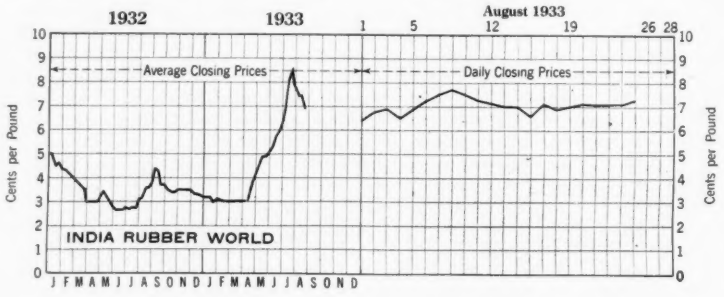
August production is holding up remarkably well, with expectations reaching 200,000 units. Usually manufacturers close down in August to retool their plants for new models, but the demand has been so good that production of last year's models is being continued. No data have been released by any company about its new car plans for next year. Production schedules are expected to total 1,800,000 for the year at the present rate, compared with 1,432,494 last year.

Outside Market prices were shaded ¼¢ last week, although business was satisfactory. Traders are optimistic about the future because in June and July almost 102,000 tons of rubber were used by manufacturers, with another 40,000 estimated for August, and so far only 15% of that rubber has been replaced. If a restriction plan is announced, there will probably be a rush to buy ahead.

Spot ribbed smoked sheets were quoted at 7¢, compared with 7¼¢ the week before; October-December 7¼ against 7½; January-March 7½ against 7¾; and April-June 7¾ against 8¢.

Week ended August 26. Rubber prices were higher the first 4 days of the week as compared with last Friday, with a fair volume. Tuesday was dull with only 2,110 tons traded, but on Monday and Wednesday sales were 3,520 and 3,040, respectively.

Prices were 37 to 56 points higher at the close of the week; the major part of the advance was scored on Friday. September closed at 7.53¢ on August 25, against 7.15¢ the week before; December 8.03 against 7.66; January 8.17 against 7.76; March 8.45 against 7.95; May 8.69 against 8.17; and July 8.93 against 8.37.



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

New York Outside Market—Spot Closing Rubber Prices—Cents per Pound

	July, 1933							August, 1933															
	24	25	26	27	28	29	31	1	2	3	4	5*	7	8	9	10	11	12*	14	15	16	17	18	19*
Ribbed Smoked Sheet.	8¼	8¼	8½	8	7⅛	7	6⅞	7⅜	7¾	7⅞	7½	...	7¾	7½	7¾	7½	7¼	...	7	7	6⅝	7⅛	6⅞	...
No. 1 Thin Latex Crepe	9	9	9¼	8¾	8	7⅞	7¾	8¼	8⅝	8¾	8⅜	...	8⅛	8⅜	8⅝	8⅜	8⅛	...	7⅞	7⅞	7½	7⅞	7⅝	...
No. 1 Thick Latex Crepe	8¾	8¾	9	8½	7⅞	7¾	7⅝	8⅛	8½	8⅝	8¼	...	8	8⅛	8⅜	8⅛	7⅞	...	7⅝	7¾	7⅜	7¾	7½	...
No. 1 Brown Crepe ...	7⅛	7⅛	7⅜	6¾	6⅝	6	5⅞	6¼	6⅝	6¾	6⅜	...	6⅝	6¾	6½	6¼	6	...	5⅞	6	5½	5⅞	5⅝	...
No. 2 Brown Crepe ...	7	7	7¼	6¾	6	5⅞	5¾	6⅛	6½	6⅝	6¼	..	6	6⅛	6⅜	6⅛	5⅞	...	5¾	5⅞	5⅜	5¾	5½	...
No. 2 Amber	7⅛	7⅛	7⅜	6⅞	6⅛	6	5⅞	6¼	6⅝	6¾	6⅜	...	6⅛	6¼	6½	6¼	6	...	5⅞	6	5½	5⅞	5⅝	...
No. 3 Amber	7	7	7¼	6¾	6	5⅞	5¾	6⅛	6½	6⅝	6¼	...	6	6⅛	6⅜	6⅛	5⅞	...	5¾	5⅞	5⅜	5¾	5½	...
No. 4 Amber	6¾	6¾	7	6½	5⅞	5¾	5⅝	6	6⅜	6½	6⅛	...	5⅞	6	6¼	6	5¾	...	5⅝	5¾	5¼	5⅝	5⅜	...
Rolled Brown	6½	6½	6¾	6¼	5½	5⅜	5¼	5⅝	6⅛	6¼	5¾	...	5½	5½	5¾	5¼	5	...	4⅞	5¼	4¾	5⅛	4⅞	...

*Closed.

Reports from London stated that the Anglo-Dutch committee had reached an agreement on restriction which was tentatively approved by the 2 governments and is now being submitted to the native governments for final acceptance. Details of the plan were not given, but it is believed an export tax is involved. It made no impression marketwise because it was only confirmation of what traders have known, and it will take a definite announcement with details to affect trading.

It was also learned that tire manufacturers are contemplating another 10% rise in prices. The reasons given were that raw materials have increased in recent weeks because of rises in cotton and rubber, and that increased salaries and wages and federal taxes have jumped.

The seasonal lull has at last affected the automobile trade, and for the August 19 week production was 53,920 units against 53,867 the week before, but this is usually the period when production takes a larger seasonal jump. *The New York Times'* index was 67.7 for August 19, compared with 68.6 the previous week and 24.5 for the corresponding week last year.

The Outside Market was quiet, but gave a good account of itself. The smaller manufacturers bought, but there is a feeling of confidence caused by the hope that restriction will soon be here.

The New York Outside Market closing prices asked on Friday, compared with last Friday's, follow: spot 7 3/8¢ against 7 1/4¢; October-December 7 1/8 against 7 1/4; January-March 7 3/8 against 7 1/2; April-June 8 1/8 against 7 3/4.

New York Quotations

New York outside market rubber quotations in cents per pound

	Aug. 26, 1932	July 25, 1933	Aug. 26, 1933
Plantations			
Rubber latex....*gal.*	51	72	72
Sheet			
Ribbed, smoked, spot	4	8 3/8/8 5/8	7 1/8
Oct.-Dec.	4 1/8	8 3/4/9	7 1/8/7 3/8
Jan.-Mar.	4 1/4	9	7 1/8/7 1/8
Apr.-June	4 3/8	..	7 3/8/8
Crepe			
No. 1 thin latex, spot	4 5/8	9 /9 3/8	7 1/8/8 1/8
Oct.-Dec.	4 3/4	9 1/2/9 3/4	8 /8 1/8
Jan.-Mar.	4 7/8	9 3/4/10	8 1/8/8 1/2
Apr.-June	5	..	8 1/8/8 1/8
No. 3 Amber, spot.	3 3/4	7 /7 1/4	6 /6 1/8
No. 1 Brown	3 3/4/3 1/8	7 1/4/7 1/2	6 1/8/6 1/8
Brown, rolled	3 1/4/3 1/8	6 1/4/6 1/2	5 1/8/5 1/8
Paras			
Upriver fine	7 1/4	10 3/4	9 1/2
Upriver fine	*10 1/4	*14 3/4	*12 3/4
Upriver coarse	†3 1/2	..	..
Upriver coarse	*5 1/2	*10	*9 1/2
Islands fine	†6 1/2	9	9
Islands fine	*10	*14 1/2	*12 1/2
Acre, Bolivian fine.	7 1/2	11	10
Acre, Bolivian fine.	*10 1/2	*15	*13
Beni, Bolivian	7 1/2	11 1/4	10
Madeira fine	7 1/4	11	9 1/2
Pontianak			
Bandjermasin	5	9 1/2/10	6
Pressed block	7	14 /14 1/2	13
Sarawak	5	9 1/2/10	6
Caucho			
Upper ball	†2 1/2	..	..
Upper ball	*5 1/2	*10	*9 1/4
Lower ball	†3	..	..
Manicobas			
Manicoba, 30% guar.	†2 1/2	†6	†5
Mangabiera, thin sheet	†2 1/2	..	..
Guayule			
Duro, washed and dried	12	12	12
Ampar	13	13	13
Africans			
Rio Nuñez	†9 3/4	11	11
Black Kassai	†7 1/2	10 1/2	10 1/2
Manihot cuttings	†3	5 1/4	5 1/4
Prime Niger flake	15	17 1/2	17 1/2
Gutta Percha			
Gutta Siak	6 1/2	14 /15	13
Gutta Soh	12	16 1/2/17	15
Red Macassar	1.50	1.60 /1.75	1.50
Balata			
Block, Ciudad Bolivar	17	27 /29	28
Manaos block	17	27 /29	29
Surinam sheets	28	42 /44	39
Amber	30	45 /50	42

*Washed and dried crepe. Shipments from Brazil. †Nominal.

U. S. Crude and Waste Rubber Imports for 1933

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1933	Totals 1932	Balata	Miscellaneous	Waste
Jan. .....*tons*	30,123	680	297	10	..	..	..	31,110	31,298	8	516	..
Feb.	18,407	246	217	5	..	..	..	18,875	30,546	16	483	1
Mar.	27,074	528	269	8	..	..	..	27,879	42,382	49	836	..
Apr.	18,436	654	369	..	..	..	..	19,459	37,017	14	463	10
May	26,770	629	147	10	..	..	..	27,556	32,224	47	628	..
June	22,086	451	192	..	..	..	..	22,729	41,394	463	574	..
July	43,155	502	631	2	..	..	..	44,290	31,078	356	646	..
Total, 7 mos., 1933 .....*tons*	186,051	3,690	2,122	35	..	..	..	191,898	.....	953	4,146	11
Total, 7 mos., 1932 .....*tons*	242,953	2,067	796	123	..	..	..	.....	245,939	397	4,160	105

Compiled from The Rubber Manufacturers Association, Inc., statistics.

Tire Production Statistics

Pneumatic Casings—All Types

	Inventory	Production	Total Shipments
1931	6,219,776	38,992,220	40,048,552
1932	6,115,487	32,067,732	32,200,820
1933			
Jan.	5,789,476	1,806,277	2,077,268
Feb.	5,901,557	1,871,498	1,833,970
Mar.	5,831,981	1,630,319	1,673,502
Apr.	5,418,979	2,498,795	2,923,154
May	5,408,132	4,151,433	4,144,138
June	5,291,952	4,879,939	5,044,363

Inner Tubes—All Types

1931	6,337,570	38,666,376	40,017,175
1932	5,399,551	29,513,246	30,328,536
1933			
Jan.	4,957,298	1,674,557	2,028,100
Feb.	5,085,321	1,778,818	1,681,853
Mar.	5,095,340	1,506,141	1,521,736
Apr.	4,951,399	2,282,298	2,440,555
May	5,105,389	3,760,121	3,570,700
June	4,877,686	4,358,325	4,622,473

Solid and Cushion Tires

1931	38,815	136,261	167,555
1932	23,830	97,089	108,581
1933			
Jan.	21,956	5,536	6,868
Feb.	.....	6,829	7,920
Mar.	.....	6,795	6,622
Apr.	.....	7,149	7,766
May	.....	9,229	9,256
June	.....	14,843	14,888

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires: Cotton Fabric Pounds	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires: Crude Rubber Pounds	Consumption of Motor Gasoline (100%) Gallons
1931...	151,143,715	456,615,428	16,941,750,000
1932...	128,981,222	416,577,533	15,698,340,000
1933			
Jan....	7,899,233	27,368,276	1,110,564,000
Feb....	7,263,337	25,123,700	979,608,000
Mar....	6,364,276	21,508,416	1,186,122,000
Apr....	10,460,327	35,169,724	1,267,392,000
May....	16,778,354	58,202,264	1,427,958,000
June...	19,552,783	67,866,087	1,583,820,000

Rubber Manufacturers Association, Inc., figures representing approximately 80% of the industry with the exception of gasoline consumption.

New York Outside Market (Continued)

	August, 1933 21	22	23	24	25	26*
Ribbed Smoked Sheet	7 1/8	7 1/8	7 1/8	7 1/8	7 1/4	..
No. 1 Thin Latex Crepe	7 7/8	7 7/8	7 7/8	7 7/8	8	..
No. 1 Thick Latex Crepe	7 3/4	7 3/4	7 3/4	7 3/4	7 7/8	..
No. 1 Brown Crepe	5 7/8	5 7/8	5 7/8	5 7/8	6 1/8	..
No. 2 Brown Crepe	5 3/4	5 3/4	5 3/4	5 3/4	6	..
No. 2 Amber	5 7/8	5 7/8	5 7/8	5 7/8	6 1/8	..
No. 3 Amber	5 3/4	5 3/4	5 3/4	5 3/4	6	..
No. 4 Amber	5 1/2	5 1/2	5 1/2	5 1/2	5 3/4	..
Rolled Brown	5	5	5	5	5 1/4	..

*Closed.

Low and High New York Spot Prices

All Prices in Cents per Pound

	August 1933*	August 1932	August 1931
PLANTATIONS			
Thin latex crepe	7 1/2/ 8 3/4	4 /5 1/8	5 1/4/6 1/4
Smoked sheet, ribbed	6 3/4/ 7 1/8	3 1/8/4 1/2	5 1/8/5 3/4
PARAS			
Upriver fine	9 3/4/11	5 3/4/7 1/2	7 1/8/8 5/8

*Figured to August 26, 1933.

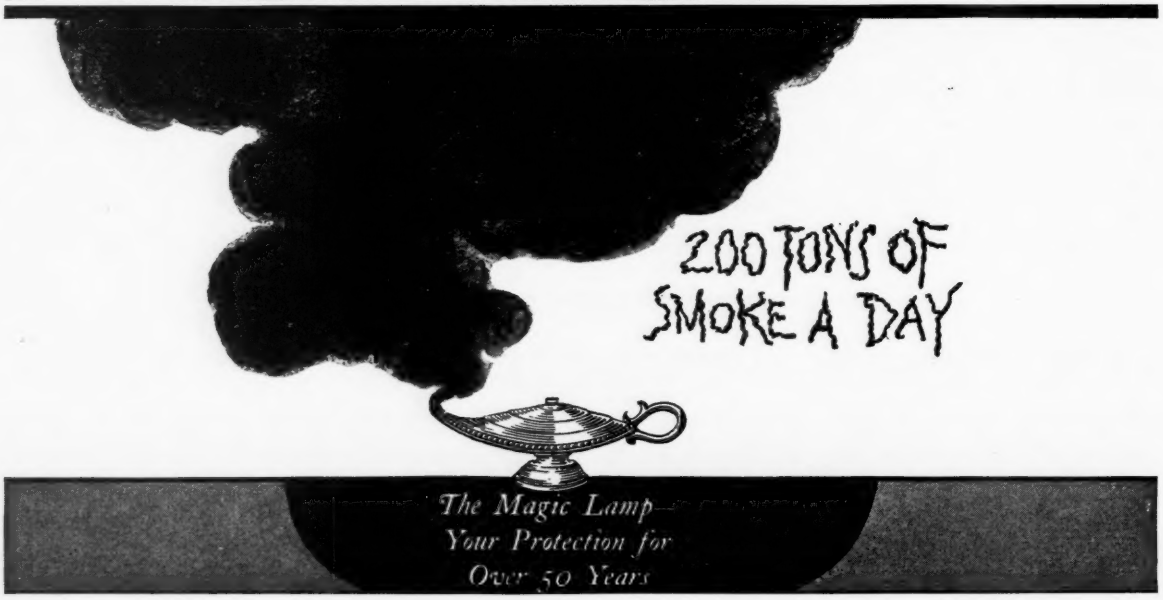
The Ace Is Still High

The dependability and faithfulness of MICRONEX in serving the rubber compounder has become proverbial and its preference by the majority of manufacturers becomes more marked from year to year. In the present New Deal MICRONEX will continue to point the way with sound leadership.

BINNEY & SMITH Co.

Specialists in CARBON BLACKS, STEARIC ACID, IRON OXIDES, MINERAL RUBBER and other products for the RUBBER INDUSTRY

41 EAST 42ND STREET, NEW YORK, N. Y.



COMPOUNDING INGREDIENTS

THERE has been an unusual demand by rubber goods manufacturers for practically every raw material used in rubber compounding. In some cases this has led to an acute shortage and necessarily higher prices. No contracts of any kind are being written, and in some cases new business is not being taken on, preference being accorded to old customers due to their increased demand. The trade is anxious to contract where possible for the balance of the year, but principals are not inclined to make any offers until they know definitely what their future labor costs will be.

The sharp rise in crude rubber prices since April has stimulated the demand and raised the prices, first of reclaim, then of mineral rubber, clay, whiting, and other cheap fillers.

ACCELERATORS. Anhydroformaldehyde-para-toluidine, conceded to be one of the best accelerators for very thick masses of rubber, is being utilized to activate more active accelerators and reduce scorching tendency.

CARBON BLACK. The consumption of carbon black for the first 4 months of this year was about in balance with production. Since the first of May, consumption increased to a marked extent, and consumers' present schedules indicate similar conditions for at least until autumn. This fact means that stocks on hand will by then be greatly reduced, and the carbon black industry will doubtless end the year with the stock position on a normal basis. Future bookings are not being sought at present because future costs are problematical and will doubtless be affected by the various industrial recovery measures now in process of application.

FACTICE. The market for this rubber compounding specialty presents a very active demand, and higher prices are liable to prevail in the future.

LITHARGE. The price of commercial grade litharge has held firm at 7¢ since it advanced to that figure July 10.

RUBBER SOLVENTS. Both heavy and light grades are in heavy demand. The last of July the price was 6¢ a gallon, the high of the year. It has since fallen by ¼¢ stages to 5¼¢, heavy or light in tank car lots f.o.b. Group 3 refineries.

TITANIUM PIGMENTS. Sales to the rubber trade of these white pigments are considerably advanced over last year, and their volume is being well maintained for this period of the year. Prices continue firm on all grades, and contracts are being accepted at current quotations up to the end of this year, but not beyond January 1, 1934.

VARNISHES AND LACQUERS for rubber goods were not quite so active in August as in June and July. Lacquer, being little known to the rubber trade, is, however, being accepted in many directions as a very satisfactory coating.

WHITING. There has been an exceptional demand for all forms of whiting, that is, the precipitated, English cliff-stone, and ground limestone. The latter grade saw 2 advances since May.

ZINC OXIDE is in steady heavy demand by the rubber trade at unchanged prices quoted at 4½ to 4¾¢ for 2-ton lots.

New York Quotations

August 26, 1933

Prices Not Reported Will Be Supplied on Application

Abrasives		
Pumicestone, pwd.	lb.	$0.02½/$0.04
Rottenstone, domestic	ton	23.50 /28.00
Accelerators, Inorganic		
Lime, hydrated	ton	20.00
Litharge (commercial)	lb.	.07
Magnesia, calcined, heavy	lb.	.04
carbonate	lb.	.06 / .06¼
Accelerators, Organic		
Accelerator 49	lb.	.39 / .49
Aldehyde ammonia	lb.	.65 / .70
Altax	lb.	
Anhydroformaldehyde-para-toluidine	lb.	
Barak	lb.	
Butene	lb.	
Captax	lb.	
Crylene	lb.	
paste	lb.	
DBA	lb.	
Di-esterex N.	lb.	
DOTG	lb.	.42 / .52
DPG	lb.	.34 / .44
du Pont 808	lb.	
833	lb.	
Ethylidine aniline	lb.	
Formaldehyde aniline	lb.	.37½/ .40
Heptene	lb.	
base	lb.	
Hexamethylenetetramine	lb.	.37
Lead oleate, No. 999	lb.	.11
Witco	lb.	.11
Lithex	lb.	
Monex	lb.	
Novex	lb.	
Plastone	lb.	
R & H 40	lb.	
50-D	lb.	
Safex	lb.	
Super-sulphur No. 1	lb.	
No. 2	lb.	
Tetrone A	lb.	
Thiocarbanilid	lb.	.20
Thionex	lb.	
Trimene	lb.	
base	lb.	
Triphenyl guanidine	lb.	.58 / .60
Tuads	lb.	
Vulcanex	lb.	
Vulcanol	lb.	
Vulcone	lb.	
ZBX	lb.	
Zimate	lb.	

Acids		
Acetic 28% (bbls.)	100 lbs.	$2.91 /$3.16
glacial (carboys)	100 lbs.	10.52 /10.77
Sulphuric, 66°	ton	15.50
Age Resisters		
Age-Rite Gel	lb.	
powder	lb.	
resin	lb.	
white	lb.	
Albasan	lb.	
Antox	lb.	
BLE	lb.	
Neozone	lb.	
Parazone	lb.	
Permalux	lb.	
VGB	lb.	
Zalba	lb.	
Antiscorch Material		
UTB	lb.	
Antisun Materials		
Heliozone	lb.	
Sunproof	lb.	
Binders, Fibrous		
Cotton flock, dark	lb.	.09 / .11½
dyed	lb.	.50 / .80
white	lb.	.11½/ .15
Rayon flock, colored	lb.	1.60 / 1.75
white	lb.	1.40
Colors		
BLACK		
Bone, powdered	lb.	.05½/ .15
Drop	lb.	.05½/ .17
Lampblack (commercial)	lb.	.08 / .12
BLUE		
Prussian	lb.	.35 / .37
Toners	lb.	.80 / 3.50
Ultramarine	lb.	.07 / .10
BROWN		
Mapico	lb	.13
Sienna, Italian, raw, pwd.	lb.	.04½/ .11
GREEN		
Chrome, light	lb.	.23 / .25½
medium	lb.	.26 / .27½
oxide	lb.	.19 / .21
Guignet's(bbls.)f.o.b.Easton	lb.	.70
Toners	lb.	.85 / 3.50
ORANGE		
Toners	lb.	.40 / 1.60
ORCHID		
Toners	lb.	1.50 / 2.00

PINK		
Toners	lb.	$1.50 /$4.00
PURPLE		
Toners	lb.	.60 / 2.00
RED		
Antimony		
Crimson, R. M. P. No. 3.	lb.	.46
Sulphur free	lb.	.48
7-A	lb.	.33
Z-2	lb.	.20
Iron Oxides		
Rub-er-red (bbls.) f.o.b. Easton	lb.	.08¾
Mapico	lb.	.08¾
Toners	lb.	.80 / 2.00
WHITE		
Lithopone (bags)	lb.	.04¼
Albalith	lb.	.04½/ .04¾
Cryptone No. 19	lb.	.06 / .06¼
CB No. 21	lb.	.06 / .06¼
Titanium oxide, pure	lb.	.17 / .18¾
Titanox "B"	lb.	.06 / .06½
"C"	lb.	.06 / .06½
Zinc Oxide		
Black label (lead free)	lb.	.05¾
F. P. Florence, green seal	lb.	.09¾/ .09⅞
red seal	lb.	.08¾/ .08⅞
white seal (bbls.)	lb.	.10⅞
Green label (lead free)	lb.	.05¾
seal, Anaconda	lb.	.09⅜/ .10⅛
Horsehead (lead free) brand		
Selected	lb.	.05¾/ .06
Special	lb.	.05¾/ .06
XX	lb.	.05¾/ .06
red	lb.	.05¾/ .06
Kadox, black label	lb.	.09¾/ .09⅞
blue label	lb.	.08¾/ .08⅞
red label	lb.	.07¾/ .07⅞
Lehigh (leaded)	lb.	.0490/ .0515
Red label (lead free)	lb.	.05¾
seal, Anaconda	lb.	.08¾/ .09⅛
Standard (leaded)	lb.	.05½/ .05¾
Sterling (leaded)	lb.	.05¾/ .05¾
Superior (leaded)	lb.	.05½/ .05¾
U. S. P. (bbls.)	lb.	.12¾
White seal, Anaconda	lb.	.10⅞/ .11⅛
XX zinc sulphide (bbls.)	lb.	.13
YELLOW		
Chrome	lb.	.15
Mapico	lb.	.09½
Ochre, domestic	lb.	.01¾/ .02½
Toners	lb.	2.50

Factice—See Rubber Substitutes

Fillers, Inert

Asbestine ..... *ton*	$14.00	
Barytes (f.o.b. St. Louis) *ton*	23.00	
off color ..... *ton*		
white ..... *ton*		
Blanc fixe, dry, precip .. *ton*	60.00	/$65.00
pulp ..... *ton*	42.50	/45.00
Infusorial earth ..... *lb.*	.03	
Kalite No. 1 ..... *ton*		
No. 3 ..... *ton*		
Suprex, heavy ..... *ton*	45.00	/55.00
white, extra light ..... *ton*	60.00	/80.00
Whiting		
Chalk, precipitated ..... *lb.*		
Domestic ..... *ton*		
Hakuenka ..... *lb.*		
Paris white, English cliff-stone ..... 100 *lbs.*		
Sussex ..... *ton*		
Witco ..... *ton*	20.00	

Fillers for Pliability

Flex ..... *lb.*		
Fumonex ..... *lb.*	.03	/ .08
P-33 ..... *lb.*		
Thermax ..... *lb.*		
Velvetex ..... *lb.*	.02	/ .06

Finishes

IVCO lacquer ..... *gal.*		
Mica, amber ..... *lb.*	.05	
Rubber lacquer No. 106.. *gal.*	3.00	
Starch, corn, pwd. ..100 *lbs.*	2.84	/ 2.95
potato ..... *lb.*	.05¼	/ .06
Talc, dusting ..... *ton*		
Pyrax A ..... *ton*		

Latex Compounding Ingredients

Accelerator 552 ..... *lb.*		
Aquarex ..... *lb.*		
Catalpo ..... *ton*		
Colloidal color pastes ..... *lb.*		
sulphur ..... *lb.*		
zinc oxide ..... *lb.*		
Disinfectants ..... *lb.*		
Dispersaid ..... *lb.*	1.50	
Dispersed Antox ..... *lb.*		
Emulsified Heliozone .... *lb.*		
Neozone L ..... *lb.*		
Tepidone ..... *lb.*		

Mineral Rubber

Genasco (fact'y) ..... *ton*	30.00	/32.00
Gilsonite (fact'y) ..... *ton*	37.34	/ 39.65
Granulated M. R. ..... *ton*		
Hydrocarbon, granulated.. *ton*	40.00	/ 42.00
hard ..... *ton*		
Parmr Grade 1 ..... *ton*	23.00	/28.00
Grade 2 ..... *ton*	23.00	/28.00

Mold Lubricants

Sericite ..... *ton*		
Soapbark (cut) ..... *lb.*	.07	/ .08
Soapstone ..... *ton*	15.00	

Oils

Castor, blown ..... *lb.*	.12¼/	.12¾
Poppy seed ..... *gal.*	1.55	/ 1.60
Red, distilled (bbls.) .... *lb.*	.07	/ .07½

Protective Colloid

Casein, domestic ..... *lb.*	.14¾/	.15

Reenforcers

Carbon Black		
Aerfloted arrow black.... *lb.*	.02¾	
Arrow specification black. *lb.*	.03	
Century (La., c. l.)..... *lb.*	.0282	
Certified, Cabot, c. l., f. o. b. works, bags.. *lb.*	.0272	
c. l., f. o. b. works, cases ..... *lb.*	.04¼	
l. c. l., f. o. b. works. *lb.*	.04¾	
Spheron (Dense Dustless Black) c. l., f. o. b. works ..... *lb.*	.0272	
Disperso (La., c. l.)..... *lb.*	.0282	
Dixie brand ..... *lb.*	.0272/	.06½
Kosmos brand ..... *lb.*	.0272/	.06½
Micronex ..... *lb.*	.03	/ .08
Ordinary (compressed or uncompressed) ..... *lb.*	.02¾/	.07
Clays		
Blue Ridge, dark ..... *ton*		
China ..... *ton*	6.00	/20.00
Dixie ..... *ton*		
Langford ..... *ton*		
Par ..... *ton*		
Perfection ..... *ton*	6.00	/20.00
Standard ..... *ton*	5.50	
Suprex No. 1 ..... *ton*	8.00	
No. 2, dark ..... *ton*	6.50	
Glue, high grade..... *lb.*	.21	/ .27

Reodorants

Amora A ..... *lb.*		
B ..... *lb.*		
C ..... *lb.*		
D ..... *lb.*		
Para-Dors ..... *lb.*	1.00	/ 6.50
Rodo ..... *lb.*		

Rubber Substitutes or Factice

Amberex ..... *lb.*	.13¾	
Black ..... *lb.*	.06	/ .08
Brown ..... *lb.*	.06	/ .11
White ..... *lb.*	.07½/	.12

Softeners

Burgundy pitch ..... *lb.*	$0.05	
Hardwood pitch, c.l. .... *ton*	24.00	/$25.00
Palm oil (Witco) ..... *lb.*	.07	
Petrolatum, light amber .. *lb.*	.02½/	.02¾
Pine tar ..... *gal.*	.25	
Plastogen ..... *lb.*		
Rosin oil, compounded... *gal.*	.30	
Rubtack ..... *lb.*	.10	
Tonox ..... *lb.*		
Witco Flux ..... *gal.*	.20	

Solvents

Benzol (90% drums) .... *gal.*	.27	
Bondogen ..... *gal.*		
Carbon bisulphide (drums) *lb.*	.05½/	.12
tetrachloride ..... *lb.*	.05¾/	.06
Turpentine, steam distilled. *gal.*	.45	/ .49

Stabilizers for Cure

Laurex, ton lots ..... *lb.*		
Stearex B ..... *lb.*	.08	/ .12
flake ..... *lb.*	.07½/	.11
Stearic acid, dbl. pres'd.... *lb.*	.09	/ .15
Zinc stearate ..... *lb.*		

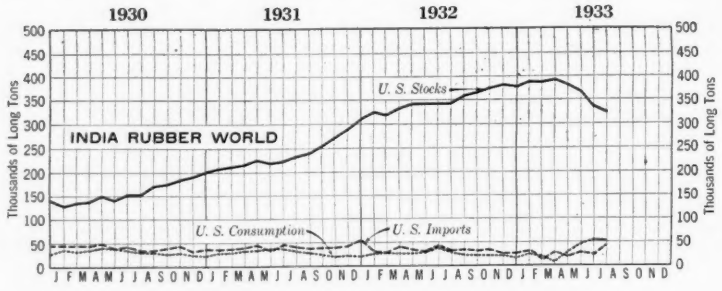
Vulcanizing Ingredients

Sulphur		
Chloride, drums ..... *lb.*	.03½/	.04
Flowers, extrafine refined, U.S.P. ..100 *lbs.*		
Rubber ..... 100 *lbs.*	1.85	/ 2.45
Telloy ..... *lb.*		
Vandex ..... *lb.*		

(See also Colors—Antimony)

AN EMPLOYE RECEIVED CONTUSIONS OF his left forearm, which injury was later followed by infection. This employe had his left arm caught in a tread machine as he attempted to keep tread from going through. As the result of this injury he was disabled for 14 days. *Rubber Section, National Safety Council.*

IMPORTS, CONSUMPTION, AND STOCKS


1930
1931
1932
1933
INDIA RUBBER WORLD
U. S. Stocks
U. S. Consumption
U. S. Imports
Thousands of Long Tons
Thousands of Long Tons
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D

United States Stocks, Imports, and Consumption

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Net Imports* Tons	U. S. Consumption Tons	U. S. Stocks on Hand† Tons	U. S. Stocks Afloat† Tons	United Kingdom Stocks†‡ Tons	Singapore and Penang, Etc., Stocks†‡ Tons	World Production (Net Exports)‡ Tons	World Consumption Estimated‡ Tons	World Stocks†‡§ Tons
1930	488,343	375,980	200,998	56,035	118,297	45,179	821,815	684,993	366,034
1931	495,163	348,986	322,825	40,455	127,103	55,458	797,441	668,660	495,724
1932	400,787	322,000	379,000	38,360	92,567	36,802	709,860	670,250	518,187
1933									
January	31,110	22,906	385,811	32,539	89,050	35,746	63,951	52,120	521,173
February ..	18,875	21,638	381,794	32,898	90,172	34,354	56,056	54,900	518,166
March	27,879	18,047	390,135	29,531	94,565	34,089	61,932	59,100	518,812
April	19,459	26,226	382,167	30,745	95,066	33,520	57,180	61,300	510,753
May	27,556	44,580	364,623	43,342	98,538	37,876	67,050	76,840	501,037
June	22,729	51,326	333,954	63,608	102,451	46,412	62,330	74,110	482,817
July	44,290	50,184	326,609	57,435	.....	.....	.....	.....	.....

*Including liquid latex, but not guayule. †Stocks on hand the last of the month or year. ‡W. H. Rickinson & Son's figures. §Stocks at the 3 main centers, U. S. A., U. K., Singapore and Penang.

CONSUMPTION of crude rubber by manufacturers in the United States for July totaled 50,184 long tons, against 51,326 long tons for June, 1933, a decrease of 2.2% under June, but 67.4% over the 29,976 long tons consumed in July, 1932, reports The Rubber Manufacturers Association, Inc. Consumption for the first 7 months of 1933 amounted to 234,908 long tons as compared with 220,900 long tons for the same period in 1932.

Crude rubber imports for July were 44,290 long tons, a gain of 94.9% over June and 42.5% over July, 1932.

The estimated total domestic stocks of crude rubber on hand July 31 were 326,609 long tons, against June 30 stocks of 333,954 long tons. July stocks declined 2.2% as compared with June, 1933, and 2.1% below stocks of July 31, 1932.

Crude rubber afloat for United States ports on July 31 was 57,435 long tons, against 63,608 long tons afloat on June 30, 1933, and 37,894 long tons afloat on July 31, 1932.

London and Liverpool Stocks

Week Ended	Tons London	Tons Liverpool
July 29.....	41,161	58,864
Aug. 5.....	41,211	58,540
Aug. 12.....	40,544	58,391
Aug. 19.....	40,116	58,050
Aug. 26.....	39,237	57,508

CHROMIUM
GREEN
OXIDE
A product of our own manufacture . . . unexcelled in purity; fast and brilliant. In WITCO Chromium Green Oxide there is no variation from order to order, for a WITCO product is a uniform product.

WITCO

WISHNICK-TUMPEER, INC.

MANUFACTURERS AND IMPORTERS

CHICAGO, 365 E. ILLINOIS ST. • NEW YORK, 251 FRONT ST. • CLEVELAND, 616 ST. CLAIR AVE., N.E.
BOSTON, 141 MILK ST.

WITCO OWNED AND OPERATED: CENTURY CARBON CO. *and* THE PIONEER ASPHALT CO.

BUY DIRECT
AND PROFIT
DIRECTLY

J. H. LANE & CO.

Tire Cord and Fabric
Chafers and Breakers
Drills and Twills
Enameling Duck
Jacket Cloth
Sheeting
Osnaburg

Wide Cotton Fabrics for the Rubber Trade

250 West 57th St.
New York, N. Y.

300 West Adams St.
Chicago, Ill.

Randall & Stickney Rubber Thickness Gauge

Send for catalog and revised price list

For measuring the thickness of rubber, paper, textiles and similar materials. Graduated in .001 inch (and in .01 mm when so ordered). Also supplied with weight in place of spring.

HEIGHT 7½ inches.

WEIGHT 4 lbs.

DIAL 1⅞ inches diameter, graduated 0—50.

CAPACITY ½ inch.

Standard of measurement in Rubber Factories for over forty years.

FRANK E. RANDALL, Waltham, Mass.

COLOR

Produces, consciously or unconsciously, certain definite mental impressions.

RED RUBBER

Suggests Richness, Style, Quality, Appearance, Long Life.

Obtain This Color, Safely, with Antimony Sulphide

'RMP' Antimony is entirely free from Acid, Alkali, Copper, Manganese,—will not bleed or fade, and will not affect the aging adversely.

Rare Metal Products Co.
Belleville, N. J.

MT. VERNON WOODBERRY MILLS, INC.

TURNER, HALSEY CO.
SALES AGENT
40 WORTH ST., NEW YORK

BALTIMORE
BOSTON

BRANCHES
CHICAGO
NEW ORLEANS

SAN FRANCISCO
ST. LOUIS

COTTON AND FABRICS

THE most important event this month was the first Government crop report. It was a disappointing one, far in excess of expectations. Whereas private reports had gone little higher than 11,500,000 bales, the Government figure was 12,314,000 bales, with the yield per acre 18% above the 10-year average.

Traders were not too optimistic about the effect of the cotton acreage destruction plan, but even this pessimism did not prepare them for the large figure. Prices, consequently, lost 84 to 93 points in the August 7 week on issuance of the estimate.

Surprisingly, the cotton plowed under was put at 4,247,000 bales, without which the crop would have been over 16,000,000 bales. Undoubtedly the plan has meant much to farmers. As C. A. Cobb, Chief of the Cotton Production Section of the Agricultural Adjustment Administration, said, the South would have been "face to face with the dire consequences of 4 or 5¢ cotton," if the whole crop had been permitted to mature.

On the other hand those statistically minded point out that altogether the crop was reduced approximately 700,000 bales from last year. The price of this small reduction was the $126,000,000 expected to result from the 4½¢ processing tax. These arithmeticians point out that the consumer is paying at the rate of $180 a bale, or 36¢ a pound as a subsidy to cotton farmers.

Mill owners protested the tax from the beginning and are increasing their protests until now they predict that many plants will be closed because of the drop in business caused by higher prices passed on to the consumer.

The present status of cotton is mixed. Output of cloth has been of record proportions up to now, but increased prices have caused a lull in trading. The carryover is again large, but the present crop is not yet harvested, and the Government bounty may look more attractive than is expected.

Foreign crops are larger in some cases; but China is buying a large amount of cotton from us; Russia is a big buyer; and the Indian boycott has cut Japan's purchases there. At home the success or failure of the NRA may soon change the whole complexion of things; but if success comes, as everyone hopes, many factors now unfavorable may be reversed.

Week ended July 29. Rain fell in the dry area of Texas and Oklahoma last week, and a private agency said the condition of the crop was not much below the 10-year average. To offset this news were indications that weevils were active and harming the crop. The renewed activity of the Government in the market to obtain ownership of 788,000 bales of cotton held as seed loans increased the volume of trading, but

COTTON BULL POINTS

1. **The Agricultural Adjustment Administration took 4,247,000 bales out of production to reduce the 1933 crop from a figure that would have been the third largest on record.**
2. **Consumption by American mills in July was 600,143 bales of lint, against 696,472 in June and 278,568 in July, 1932.**
3. **For the year ended July 31 consumption in the United States was 6,135,595 bales, against 4,866,016 last year.**
4. **Cotton on hand in manufacturing establishments and warehouses totaled 7,090,133 bales on July 31, compared with 7,719,748 the month before and 7,917,754 a year ago.**
5. **World consumption in 1933 was 24,725,000 bales, against 23,007,000 the season before.**
6. **Mill activity approached a record early in August, according to the New Orleans Cotton Exchange.**
7. **Agitation is growing for another restriction of the cotton crop next year.**
8. **July exports were 692,007 bales, against 449,476 last July.**
9. **World carryover on August 1 was put at 2,000,000 bales under last year's figure, the first drop since the 1929-1930 season.**
10. **July operation in the spinning industry was 117.5% of capacity against 129.1% in June and 51.7% in July, 1932.**

COTTON BEAR POINTS

1. **The 1933 crop was put at 12,314,000 bales by the Department of Agriculture, against average private estimates of about 11,000,000 bales.**
2. **The indicated yield of the crop is 198.4 pounds an acre, 18% above the 1922-31 average.**
3. **Exports for the year ended July 31 were 8,419,399 bales, against 8,706,890 last year.**
4. **Egyptian cotton acreage for 1933 is estimated at 1,804,209 feddans (slightly over an acre for a feddan) against 1,093,701 last year.**
5. **The Chinese crop is put at 2,860,000 bales, against 2,300,000 last year.**
6. **Sales of cotton cloth are much lower since prices were raised to include the processing tax.**
7. **Mill owners contend they will be forced to close down partially because the processing tax has cut into their sales.**

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
July 29	10.60
Aug. 5	10.23
Aug. 12	9.58
Aug. 19	9.07
Aug. 26	9.43

mills displayed less interest in the market, and the break of over $2 a bale on Friday was largely the result of a lack of buying. So much cotton has been bought in the last 3 months by mills who are now doubtful if they can dispose of their goods at higher prices, that their withdrawal was expected. Friday's losses wiped out most of the week's gains, but the market closed higher by 20 to 31 points.

October closed at 10.60¢, compared with 10.32¢ the week before; December 10.82 against 10.51; January 10.92 against 10.66; March 11.03 against 10.83; and May 11.21 against 10.93.

A year's extension was given to farmers to exercise their options on 2,000,000 bales of government-owned cotton after reducing their acreage under the plan of the Agricultural Adjustment Administration. "This extension of time," said the announcement, "should enhance the orderly marketing of the option cotton and minimize the possibility of placing a large portion of the cotton on the market at a time when it would compete with the crop to be harvested this Fall."

Forwardings of cotton to mills in the July 22 week were 101,000 bales against 150,000 the preceding week, according to the New York Cotton Exchange. The processing tax, the adoption of the code, and less demand were given as the reasons for the decline. To date forwardings to mills of the world are 1,000,000 bales ahead of last year. Exports are now within almost 300,000 bales of last year's figure.

The Government at Washington approved the rulings of the Cotton Exchange which limit price fluctuations. The prevailing margin is $5 a bale, and the limitation of 200 points for one day's trading was thought adequate.

Week ended August 5. Rainfall in sections of Texas and Oklahoma that had not been touched by showers for 2 months caused a decline of $2.20 to $2.55 a bale in cotton prices Monday, but a New Orleans report showing a smaller carryover than had been estimated by the Exchange brought a rally next day. For the rest of the week trading was nervous and light in volume. Because of the Government report due next Tuesday many uncertainties confront the market which have caused speculators to withdraw temporarily.

The net result of the week's trading was losses of 44 to 47 points. October closed at 10.16¢, compared with 10.60¢ the week before; December 10.38 against 10.82; January 10.45 against 10.92; March 10.58 against 11.03; May 10.75 against 11.21; and July 10.91 against 11.38.

Weather reports at the end of the week stated that the crop was making fair to good progress. A few isolated Western sections still need rain, and some portions of the South Central district have had too much moisture, but the relief of the drought in Texas and Oklahoma has brought the average up considerably.

The New Orleans Exchange issued figures estimating a carryover of 11,339,000 bales, in contrast with the New York Exchange figures of 11,975,000, and put world consumption at 14,132,000 bales against 14,424,000 by New York. Consumption this season was the largest since 1929 when 15,226,000 bales of United States staple were used by world spinners.

Week ended August 12. The Government estimate of 12,314,000 bales was a distinct surprise to traders whose estimates had been far below this figure, and cotton declined 27 to 30 points on Tuesday, but the loss was recovered the next day. For the rest of the week, however, prices were under pressure from the heaviest hedge selling of the season, good crop weather, and a dull textile market. At the close on Saturday quotations were from 84

to 93 points below those of the week before.

October closed at 9.32¢, compared with 10.16¢ last week; December 9.51 against 10.38; January 9.56 against 10.45; March 9.70 against 10.58; May 9.83 against 10.75; and July 9.98 against 10.91.

The Government report made allowance of 4,247,000 bales, the estimated yield on 10,304,000 acres taken out of cultivation by farmers under agreement with the Government. Without this reduction it would have been the third largest crop on record at 16,561,000 bales.

Before the report was issued the average of 9 private estimates was 11,145,000 bales, and the average estimate of the members of the Cotton Exchange was 10,998,000 bales. Comparing with last year's crop of close to 13,000,000 bales, the present one will mean a carryover of around 24,000,000 bales.

Domestic cotton mills made a July record when they ran at 117% of the 1922-27 average rate, against 54% in July last year, 80% 2 years ago, and 61% 3 years ago.

In the last week, however, mill sales were reported to be much lower than prior weeks. Manufacturers are maintaining prices, but dealers who have been stocking up for 2 months past are waiting for a readjustment in price.

Week ended August 19. Only twice during the week did prices end the day with a gain. Liquidation of old and hedging against the new cotton softened the market, and even the heavy purchases by the Government did not stop the down trend early in the week. But Thursday saw a sharp reversal caused by rumors of inflation and a fall in dollar exchange so that net gains for the day reached 64 to 75 points. The heavy buying encountered a scarcity of contracts since most of the long accounts had been liquidated.

At the close of the week quotations were from 8 to 22 points higher. October was 9.40¢, compared with 9.32¢ last week; December 9.61 against 9.51; January 9.74 against 9.56; March 9.90 against 9.70; and May 10.05 against 9.83.

The Census Bureau reported July consumption as 600,143 bales of lint and 90,497 of linters, compared with 696,472 and 81,468, respectively, in June and 278,568 and 37,896, respectively, in July, 1932. For the year ended July 31 consumption was 6,135,595 bales, compared with 4,866,016 in the previous year. Exports for the year were 8,418,527 bales, against 8,706,858. American stocks in manufacturing establishments and warehouses, exclusive of linters, were 7,090,133 on July 31, compared with 7,719,748 on June 30 and 7,917,754 on July 31 last year.

Cotton forwardings last week reversed the seasonal trend, and after 4 weeks' decline turned upward. Actual forwardings were 90,000 bales, twice those of a year ago, but 8,000 less than in the previous week.

Week ended August 26. Up until the middle of the week the market had more than held its own. Trading was lighter, and on Monday large changes were made between sales, but at the close quotations were only 2 to 7 points off. Purchases by foreign mills on Tuesday and resistance against sales pressure saw prices 10 to 17 points higher. On Wednesday occurred a break of $1.50 a bale in sympathy with a decline in securities and wheat, the close being 11 to 17 points off. Thursday the market opened strong, but in the afternoon lost its gains.

The Census Bureau reported that the cotton spinning industry operated at 117.5% of capacity on a single shift basis in July, compared with 129.1% during June, and 51.7% in July last year. Spindle hours averaged 263, against 301 in June, and 115 last year. Reports are circulating that southern mills might close down in protest against the processing tax. At any rate sales of cotton cloth and grey goods have slowed down because of the higher prices.

The first ginning report showed a total of 460,000 bales, compared with 251,000 bales to August 16, 1932, and 91,000 the same time 2 years ago. Weevils are increasing, but the crop is enjoying good weather.

Cotton futures closed firm and unchanged to 2 points higher on Saturday. Closing prices, compared with last week's, were: October 9.67 against 9.40; December 9.88 against 9.61; January 9.99 against 9.74; March 10.14 against 9.90; and May 10.22 against 10.05.

New York Quotations

August 26, 1933

		Cents
Drills		
38-inch 2.00-yard	yd.	$0.16½
40-inch 3.47-yard		.10
50-inch 1.52-yard		.23⅜
52-inch 1.90-yard		.19
52-inch 2.20-yard		.17
52-inch 1.85-yard		.19½
Ducks		
38-inch 2.00-yard D. F.	yd.	.17
40-inch 1.45-yard S. F.		.24¼
72-inch 1.05-yard D. F.		.33
72-inch 16.66-ounce		.36
72-inch 17.21-ounce		.37
MECHANICAL		
Hose and belting	lb.	.34
TENNIS		
52-inch 1.35-yard	yd.	.26¼
***Hollands**		
GOLD SEAL		
30-inch No. 72	yd.	.19½
40-inch No. 72		.21½
RED SEAL		
30-inch	yd.	.17
40-inch		.18½
50-inch		.24½
Osnaburgs		
40-inch 2.34-yard	yd.	.15
40-inch 2.48-yard		.14⅛
40-inch 3.00-yard		.11½
40-inch 10-ounce part waste		.16¾
40-inch 7-ounce part waste		.12⅝
37-inch 2.42-yard		.14½
Raincoat Fabrics		
COTTON		
Bombazine 60 x 64	yd.	.11¼
Bombazine 60 x 48		.10¾
Plaids 60 x 48		.11½
Plaids 48 x 48		.11
Surface prints 60 x 64		.13¼
Surface prints 60 x 48		.12¾
Print cloth, 38½-inch, 64 x 60		.07
Print cloth, 38¼-inch, 60 x 48		.06
SHEETINGS, 40-INCH		
48 x 48, 2.50-yard	yd.	.12
48 x 48, 2.85-yard		.10¼
64 x 68, 3.15-yard		.11½
56 x 60, 3.60-yard		.10
44 x 48, 3.75-yard		.08¾
44 x 40, 4.25-yard		.08¼
SHEETINGS, 36-INCH		
48 x 44, 5.00-yard	yd.	.06¾
44 x 40, 6.15-yard		.05½
Tire Fabrics		
BUILDER		
17¼ ounce 60" 23/11 ply Karded peeler	lb.	.40
17¼ ounce 60" 10/5 ply Karded peeler	lb.	.37
CHAFER		
14 ounce 60" 20/8 ply Karded peeler	lb.	.40
12 ounce 60" 10/4 ply Karded peeler	lb.	.36
9¼ ounce 60" 20/4 ply Karded peeler	lb.	.42
9¼ ounce 60" 10/2 ply Karded peeler	lb.	.37
CORD FABRICS		
23/5/3 Karded peeler, 1 1/32" cotton	lb.	.43
23/4/3 Karded peeler, 1 1/32" cotton	lb.	.44
15/3/3 Karded peeler, 1 1/32" cotton	lb.	.41
13/3/3 Karded peeler, 1 1/32" cotton	lb.	.40
7/2/2 Karded peeler, 1 1/32" cotton	lb.	.38
23/5/3 Karded peeler, 1¼" cotton	lb.	.52
23/5/3 Karded Egyptian, Egyptian upper cotton	lb.	.57
23/5/3 Combed Egyptian	lb.	.52
LENO BREAKER		
8¼ ounce and 10¼ ounce 60" Karded peeler	lb.	.35

*Prices for 1,200 yards of a width or over.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. The demand for these goods is markedly less than it was a month ago. Basic prices have eased somewhat, but adding the processing tax which became effective on textiles August 1 gives a higher per yard price for the individual cloths. Renewed interest is looked for on these fabrics immediately after Labor Day because consumers' stocks are believed to be very low.

RAINCOAT FABRICS. Business has been excellent recently with manufacturers of raincoats owing to the protracted rainy weather. Thus their fall business has begun earlier than usual. All of the manufacturers are displaying very attractive lines, considered to be the best they have ever shown. They comprise mostly cotton prints as these are the vogue of the present season.

SHEETINGS. The cloth market has been inactive since the latter part of July primarily owing to the uncertainty in the commodity markets and to the fact that many of the excise taxes applicable against grey goods include processing and labor charges required to be fixed and put into operation. At this time of year it is not unusual to experience a falling off of demand; consequently a quiet period is expected until after Labor Day. Prices have declined considerably from the highs reached the middle of July.

TIRE FABRICS. Quotations were made on combed and carded grades of Egyptian cords up to August 7, and subsequent to that date quotations are published on American grades only. Fabric producers favor holding price levels firm. Easing of the cotton market caused tire manufacturers to reduce their inquiry for fabrics.

THIS

DRESS SHIELD

MANUFACTURER

wanted to eliminate the slight rubber odor in dress shields. Yet he did not want them perfumed. A

PARA-DOR

was the solution to his problem. We developed a Para-Dor that gave him this neutral effect at negligible cost.

Para-Dors are aromatic chemicals for counteracting odor in rubber compounds. There are 15 Para-Dors—neutral or floral scented—designed for different types of rubber goods.

May we send you information?

GIVAUDAN-DELAWANNA INC.
Industrial Aromatics Division
80 Fifth Avenue, New York, N. Y.

Regular and Special Constructions
of
COTTON FABRICS

Single Filling Double Filling
and
ARMY
Ducks

HOSE and BELTING
Ducks

Drills

Selected
Osnaburgs

Curran & Barry
320 BROADWAY
NEW YORK

RUBBER SCRAP

THE seasonal slowing down of business prior to fall affected scrap prices during August on the standard grades, but a few varieties held their own or increased in price. Boots and shoes showed no change in price; hard rubber was quoted higher; and mechanicals showed a mixed trend. Tires and tubes declined the most because collections were heavy and dealers had to make concessions.

Export demand is still good for tires and tubes, and as domestic manufacturers become adjusted to the new working conditions under the NRA code and a definite price trend can be discerned, business should improve. Takings by reclaim manufacturers continued on the upward trend started in May.

BOOTS AND SHOES. Quotations on this grade showed no price change. The return to collectors is too small to be worth while.

TIRES. Reclaimers are extremely busy furnishing rubber to tire men, and the consumption rate is high. Owing to lower prices for raw rubber and fiber, however, prices showed large losses. Mixed beads lost $2 to $3 last month; beadless, $1.50 to $2.50; carcass, $2 to $3; peelings, $4.50 to $5.50. Clean solids were unchanged, but light gravity solids gained $5 because of scarcity in collections.

TUBES. A much easier tone prevailed in scrap for tubes. Prices lost from ¼ to ½¢, although demand was close to the level in July. Quotations declined with those for tires.

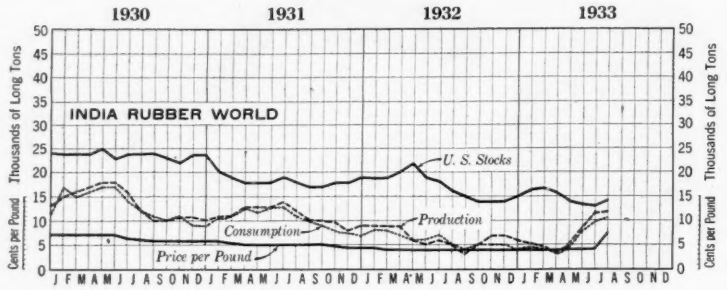
MECHANICALS. Air brake hose scrap gained $1 over July, and No. 1 red scrap declined about ¼¢, but the remaining grades held firmly. Demand is good.

HARD RUBBER. Reversing the trend of the last few months, this grade of scrap increased about 1½¢ in price, with very good demand.

CONSUMERS' BUYING PRICES
(Carload Lots Delivered Eastern Mills)
August 26, 1933

		Prices
Boots and Shoes		
Boots and shoes, black	lb.	$0.01¼/$0.01½
Colored	lb.	.01 / .01¼
Untrimmed arctics	lb.	.01 / .01¼
Inner Tubes		
No. 1, floating	lb.	.05¼/ .05½
No. 2, compound	lb.	.02¾/ .02⅞
Red	lb.	.02¾/ .02⅞
Mixed tubes	lb.	.02½/ .02¾
Tires (Akron District)		
Pneumatic Standard		
Mixed auto tires with beads	ton	11.00 /11.50
Beadless	ton	16.00 /16.50
Auto tire carcass	ton	12.00 /13.00
Black auto peelings	ton	18.50 /19.50
Solid		
Clean mixed truck	ton	30.00 /33.00
Light gravity	ton	40.00 /42.00
Mechanicals		
Mixed black scrap	lb.	.01 / .01¼
Hose, air brake	ton	10.00 /11.00
Garden, rubber covered	ton	9.00 /10.00
Steam and water, soft	ton	9.00 /10.00
No. 1 red	lb.	.01½/ .01¾
No. 2 red	lb.	.01 / .01¼
White druggists' sundries	lb.	.01¾/ .01⅞
Mechanical	lb.	.01¼/ .01½
Hard Rubber		
No. 1 hard rubber	lb.	.07¾/ .08

RECLAIMED RUBBER


1930
1931
1932
1933
INDIA RUBBER WORLD
U. S. Stocks
Production
Consumption
Price per Pound
Thousands of Long Tons
Cents per Pound
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D

Production, Consumption, Stocks, and Price of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1930	157,967	153,497	41.5	24,008	9,468
1931	132,462	125,001	35.7	19,257	6,971
1932	75,656	77,500	23.3	21,714	3,536
1933					
January	5,301	4,811	21.0	16,262	130
February	4,578	4,363	20.2	16,570	178
March	3,847	3,454	19.1	15,496	353
April	4,617	4,407	16.8	14,370	165
May	8,366	7,770	17.4	13,734	319
June	10,591	9,674	18.8	13,231	223
July	12,049	10,327	20.6	14,108	...

* Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

THE efforts of manufacturers last month to rush production and supply demands of those users of reclaim who were low in stocks, was maintained during August at only a slightly lower figure from July. The slackening in demand is merely seasonal, with some of it caused by adoption of the NRA code.

Many manufacturers are still working 24 hours a day, but they have increased the number of shifts to comply with the code. This change has naturally slowed output somewhat. Prior to Labor Day, however, there usually is a lull until manufacturers get a more definite picture of fall requirements.

The higher cost of crude rubber as compared with early this year has been of great benefit to reclaimers. Comparative prices are more favorable to reclaim now, and manufacturers are using their old proportions of reclaim as they did before crude prices dropped to the 3¢ level.

July consumption of reclaim was 10,327 tons, compared with 9,674 in June; production was 12,049, against 10,591; and stocks on hand were 14,108 tons, compared with 13,231 at the end of June.

The ratio of reclaim used to crude was 20.6%, compared with 18.8% the month before. Considering the 50,000 tons of crude rubber used, which is of record proportions, the ratio is decidedly advantageous. August crude consumption is expected to be lower by 10,000 tons, and reclaim will drop off somewhat because of seasonal influences, but the ratio should show up well again.

Prices were unchanged from last month except in 2 instances. Unwashed shoe reclaim rose to 6¾@7 from 6½@7, and No. 1 tubes were 11@11½ from 7½@8. The scarcity of this type of reclaim was responsible for its rise.

Louis J. Plumb, long secretary and treasurer of the Rubber Reclaimers Association, was forced to resign last month owing to pressure of business.

New York Quotations
August 26, 1933

	Spec. Grav.	Cents per Lb.
High Tensile		
Super-reclaim, black	1.20	7 /7½
red	1.20	6½/7
Auto Tire		
Black	1.21	5 /5½
Black selected tires	1.18	5¼/5¾
Dark gray	1.35	5½/6
White	1.40	6½/7
Shoe		
Unwashed	1.60	6¾/7
Washed	1.50	8 /9
Tube		
No. 1	1.00	11 /11½
No. 2	1.10	6½/7
Truck Tire		
Truck tire, heavy gravity	1.55	6 /6¼
Truck tire, light gravity	1.40	6¼/6¾
Miscellaneous		
Mechanical blends	1.60	4 /4½

CLASSIFIED ADVERTISEMENTS

SITUATIONS WANTED

BUSINESS OPPORTUNITY WANTED BY COLLEGE GRADUATE many years with a single concern in charge of development and production of a modern line of rubberized fabrics and also the manufacture of a widely diversified line of rubber clothing, plain surface, embossed, flocked, single texture, double texture, cemented, stitched, strapped, etc. Address Box No. 255, care of INDIA RUBBER WORLD.

PRODUCTION EXPERT IN TIRES AND TUBES, EFFICIENT executive ability, twenty years' rubber experience, some foreign experience. References foreign and domestic. Address Box No. 259, care of INDIA RUBBER WORLD.

NEW CONNECTION DESIRED BY GENERAL MANAGER now employed, 35 years old with a twelve-year record as a successful manufacturer and sales executive in footwear and mechanicals. Prefer investment with company. Address Box No. 260, care of INDIA RUBBER WORLD.

YOUNG MAN, EXPERIENCED IN SALES AND ADVERTISING promotion, with knowledge of rubber and textile machinery, desires any legitimate opening on part or full time. Address Box No. 262, care of INDIA RUBBER WORLD.

FACTORY EXECUTIVE, 25 YEARS' EXPERIENCE, WOULD LIKE position as purchasing agent, payroll supervisor, or office manager. Replies confidential. Address Box No. 263, care of INDIA RUBBER WORLD.

FOREMAN OF PLASTIC DEPARTMENT, THOROUGHLY FAMiliar with all phases of production, desires to locate with a reliable firm. At present employed. Can furnish best of references as to ability and efficiency. Address Box No. 264, care of INDIA RUBBER WORLD.

MECHANICAL GOODS COMPOUNDER AND CHEMIST: 8 YEARS' experience on a wide variety of mechanical rubber goods. Has also had charge of development of factory processes. Good handler of men. Capable taking charge of small mechanical goods plant. College graduate. Excellent references. Employed. Address Box No. 266, care of INDIA RUBBER WORLD.

ASSISTANT SUPERINTENDENT OR GENERAL FOREMAN: EXperienced in both soft and hard rubber mechanicals, calenders, mills, and presses. Knowledge of compounding. Reputed excellent handler of men. Address Box No. 267, care of INDIA RUBBER WORLD.

SITUATIONS WANTED—Continued

FACTORY MANAGER OR GENERAL SUPERINTENDENT OF broad and diversified experience in all lines of heavy mechanicals, sponge, soles and heels, rubber covered rolls, sundries, hard rubber, specialties, and automotive parts, desires to connect with progressive company. Thoroughly familiar with calenders, mills, presses, and general development work. Competent to organize new plant and train organization. Address Box No. 269, care of INDIA RUBBER WORLD.

FACTORY MANAGER DESIRES NEW CONNECtion. 30 years' practical experience in the manufacture of tires and tubes, conveyer and transmission belting, air, steam, water and suction hose, braided hose and fire hose, valves and packing, rubber covered rolls, molded and general mechanical rubber goods. Well versed in mills, calenders, and tubing machines. Expert compounder and can handle men. Can control costs and control uniformity of product at all times. Address Box No. 270, care of INDIA RUBBER WORLD.

MILL AND CALENDER ROOM FOREMAN, WITH YEARS OF experience on mechanicals, tires, and sundries. Can handle production and costs in these departments to best advantages. Address Box No. 272, care of INDIA RUBBER WORLD.

FACTORY SUPERINTENDENT, 18 YEARS' EXperience in the manufacture of mechanical goods, tubes, and hard rubber, desires connection with responsible firm. A-1 references. Address Box No. 271, care of INDIA RUBBER WORLD.

SITUATIONS OPEN

WANTED: GRADUATE INDUSTRIAL CHEMIST WITH THOROugh practical experience in the manufacture of rubber goods, especially tires and mechanicals. Position offers progressive possibilities to resourceful man. Initial application should state fully qualifications and past responsibilities; also salary expected. All information held strictly confidential. Address Box No. 258, care of INDIA RUBBER WORLD.

WANTED: 2 EXPERIENCED MEN, ONE FOR MECHANICAL goods compounding; one for superintendent of a dipped goods department. Give complete information regarding education, and salary wanted. Address Box No. 268, care of INDIA RUBBER WORLD.

MR. RUBBER MANUFACTURER!

Don't hold out! Get in on

THE NEW DEAL!

Use the upper decks of your presses! Cut your overhead! Stop passing dividends! Don't stay on with a two or a three-day week, but start operating with a full house! Bridge the depression by making a bid for the rubber trade's most unsaturated market—golf balls—used in the Royal and Ancient Game. Let us assist you.

PLANT INSTALLATION AND OPERATION
PROCESSES FORMULAS EQUIPMENT DEVELOPMENT

I. T. GURMAN, CONSULTANT
CHEMICAL, MECHANICAL & INDUSTRIAL ENGINEERING
GOLF BALL SPECIALIST
1 WYETH STREET MALDEN, MASS.

UNITED

GUARANTEED REBUILT MACHINERY

IMMEDIATE DELIVERIES FROM STOCK

MILLS, CALENDERS, TUBERS, HYDRAULIC PRESSES, PUMPS, VULCANIZERS, TIRE MAKING EQUIPMENT, MOULDS, ETC.

UNITED RUBBER MACHINERY EXCHANGE

319-323 FRELINGHUYSEN AVE. NEWARK, N. J.
CABLE ADDRESS "URME"

BUREAU OF STANDARDS SCIENTISTS AVAILABLE

Fifteen men experienced in research, testing, and other work on rubber have been separated from the staff of the Bureau of Standards on account of drastic curtailment of funds resulting from the Government's economy program, and are now seeking employment.

Each of these men has had experience in one or more of the following fields:

Testing	Safety engineering
Microscopy	Compounding
Organic chemistry	Photoelasticity
Mathematical physics	X-ray
Trade standards	Thermal conductivity
Specifications	Cable development

Inquiries will be referred to the men best qualified.

Address Box No. 265, care of

INDIA RUBBER WORLD

(*Advertisements continued on page 75*)

Editor's Book Table

NEW PUBLICATIONS

"A Key to Industrial Recovery." Farrel-Birmingham Co., Inc., Ansonia, Conn. The economic justification for mechanization of industry is analyzed in this booklet which is the third of a series discussing topics of current interest to business men. It shows that the installation of improved machinery is in keeping with the spirit of the recovery program and benefits both employer and labor by permitting higher earnings to both.

"The Commodity Markets." H. Hentz & Co., New York Cotton Exchange Bldg., Hanover Sq., New York, N. Y. 1933. This book of 143 pages is a revision of the edition of 1931. Its purpose is to serve as a ready reference for pertinent statistics, prices, etc., over a period of years of the principal commodities. Those referred to are cocoa, coffee, copper, cotton, cottonseed oil, grains, hides, rubber, silk, silver, sugar, tin, and wool. In the section devoted to rubber are included statistics on automobile production in the United States and Canada, annual United States motor vehicle replacements, United States motor vehicle registrations, annual world motor vehicle registrations, and domestic demand for gasoline in the United States.

"Deodorizing Rubber Goods." Givaudan-Delawanna, Inc., 80 Fifth Ave., New York, N. Y. This 4-page illustrated folder displays reprints of articles on the improvement in sales value effected by deodorizing rubber goods. Price lists are given of the so-called line of Para-Dors for sheeting, raincoating, bathing caps and sundries, footwear, mats, and rubberized carpeting.

"What Thiokol Is Doing for Industry." Thiokol Corp., Yardville, N. J. This booklet relates the general properties of Thiokol and illustrates many of its uses in industry where its ability to withstand oils and like solvents is useful in the manufacture, distribution, and consumption of these products.

"Belmont Packings Catalog 33." The Belmont Packing & Rubber Co., Philadelphia, Pa. Something over 250 indexed items of packings and valves are listed and described in this catalog as to their construction and applications. Practically all of these goods embody more or less rubber in their construction. The book contains a chart of recommended uses for the packings described. Tables of mechanical data, steam temperatures, decimal equivalents, circumferences and areas of circles, and metric conversion are given.

Consolidated News. July, 1933. Consolidated Products Co., Inc., 15 Park Row Bldg., New York, N. Y. This 4-page news sheet is devoted to illustrated listings of used machinery suitable for a diversity of manufacturing operations, including cement making, vacuum drying, etc.

The Vanderbilt News. R. T. Vanderbilt Co., Inc., 230 Park Ave., New York, N. Y. The July-August, 1933, issue of this publication is devoted to a practical exposition of the popular accelerator, Captax. Its history, properties, and advantages are fully set forth from every angle of compounding experience. Many practical formulae are included in which Captax and other Vanderbilt materials are named.

Preliminary suggestions are put forth for the possible use of what are believed the best materials available for carcass compounds for small or medium sized tires, inner tubes for passenger cars and bus-truck sizes.

RUBBER BIBLIOGRAPHY

DETERMINATION OF FREE SULPHUR BY A VOLUMETRIC METHOD. Part II. W. D. Guppy, *Trans. Inst. Rubber Ind.*, June, 1933, pp. 59-66.

STUDIES IN THE INTERFACIAL RELATIONSHIPS BETWEEN RUBBER AND FILLERS. I. Tear Resistance of Vulcanized Rubber. Part IV. G. D. Lefcaditis, *Trans. Inst. Rubber Ind.*, June, 1933, pp. 67-93.

SEPARATION AND IDENTIFICATION OF SOL-RUBBER HYDROCARBONS. T. Midgley, Jr., and A. L. Henne, *J. Phys. Chem.*, December, 1932, pp. 2880-84.

STRUCTURAL VISCOSITY IN SOME LYCOPHILIC SOLS. II. Rubber Sols. W. Gallay, *Can. J. Research*, December, 1932, pp. 671-76.

VOLUMETRIC DETERMINATION OF FREE SULPHUR. A. Castiglioni, *Z. anal. Chem.*, 91, 1-2, 32-33 (1932).

TWELFTH REPORT ON NATIVE RUBBER CULTIVATION IN THE NETHERLANDS INDIES, THIRD QUARTER, 1932. Prepared by the Bureau of Agricultural Economics of the Division of Agriculture of the Netherland Indian Department of Agriculture, Industry and Commerce at Buitenzorg, Java. Pp. 11, 8½ by 5¼. (Buitenzorg: Bureau of Agricultural Economics, 1932.)

SCREW MICROMETER GAGES FOR RUBBER SPECIMENS. W. L. Holt, *Bur. Standards, J. Research*, May, 1933, pp. 575-582.

THE FLEXOMETER, An Instrument for Evaluating the Flexural Properties of Cloth and Similar Materials. H. F. Schiefer, *Bur. Standards, J. Research*, May, 1933, pp. 647-57.

THE COMPRESSOMETER, An Instrument for Evaluating the Thickness, Compressibility, and Compressional Resilience of Textiles and Similar Materials. H. F. Schiefer, *Bur. Standards, J. Research*, June, 1933, pp. 705-713.

EFFECT OF RECLAIM ON THE MANIPULATION OF RUBBER. G. Martin and H. C. Baker, *Trans. Inst. Rubber Ind.*, June, 1933, pp. 14-38.

COAGULATION OF LATEX AND LATEX MIXINGS FOR INDUSTRIAL PURPOSES. R. G. James, *Trans. Inst. Rubber Ind.*, June, 1933, pp. 42-57.

ORIGIN OF ACCELERATORS. The Works of M. Oenslager, Holder of the Perkin Medal. A. D. Luttringer, *Caoutchouc & gutta-percha*, July, 1933, p. 16453.

SCORCHING OF DIFFERENT ACCELERATORS. B. Fabrizen and R. Schabanowa, *Rev. gén. caoutchouc*, June, 1933, pp. 3-16.

STRESS-STRAIN RELATIONSHIPS OF VULCANIZED INDIA RUBBER. A Correction. J. R. Scott and W. Shacklock, *Trans. Inst. Rubber Ind.*, June, 1933, pp. 94-96.

MANUFACTURE OF WHITE INDIA-RUBBER SUBSTITUTE. T. J. G., *India Rubber J.*, July 22, 1933, pp. 108-109.

MANUFACTURE OF DARK INDIA-RUBBER SUBSTITUTE. T. J. G., *India Rubber J.*, July 29, 1933, pp. 135-36.

TREND OF LATEX EQUIPMENT DEVELOPMENT. G. D. Kratz, *Rubber Age (N. Y.)*, July, 1933, pp. 157-58.

CEYLON CLONES. R. K. S. Murray, *Trop. Agr.*, June, 1933, pp. 333-48.

CONDITION OF RUBBER IN SOLUTIONS. Effect of Temperature on the Viscosity of Solutions of Various Concentrations. B. Dogadkin and M. Lawrenenko, *Kautschuk*, July, 1933, pp. 97-100.

TEARING STRENGTH OF RUBBER COMPOUNDS. J. Talalay, *Kautschuk*, July, 1933, pp. 100-104. (Conclusion.)

DEVELOPMENT OF THE PRODUCTION OF CARBON BLACK IN NORTH AMERICA. W. Esch, *Kautschuk*, July, 1933, pp. 104-106.

PROBLEM OF THE CHANGES IN RUBBER DUE TO ATMOSPHERIC OXYGEN. II. F. Kirchhof, *Kautschuk*, July, 1933, pp. 106-109. (To be continued.)

ERNEST JACOBY

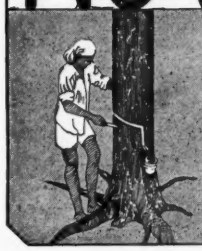
Crude Rubber
Liquid Latex
Carbon Black
Clay

Stocks of above carried at all times

BOSTON MASS.
Cable Address: Jacobite Boston

NORMAL - CONCENTRATED - PROCESSED

Heveatex



RUBBER LATEX

Always In Stock For Immediate Delivery

HEVEATEX CORPORATION
78 GOODYEAR AVE.
MELROSE, MASS.

Classified Advertisements

Continued

BUSINESS OPPORTUNITIES

REPRESENTATION IN FRANCE: TECHNICAL FIRM, WELL introduced, seeks representation for processes, machinery, or products for manufacturers. Address Box No. 261, care of INDIA RUBBER WORLD.

MACHINERY AND SUPPLIES FOR SALE

FOR SALE: ONE 18 BY 54" BIRMINGHAM 4-ROLL CALENDER; one unused 18 by 30" heavy duty FARREL MILL, chain drive; complete line of W. & P. Mixers, Vacuum Shelf Driers, Calenders, Mills, Colloid Mills, Pebble Mills, Dough Mixers, Hydraulic Presses, Pumps, etc. Rebuilt, guaranteed. What machinery have you for sale? CONSOLIDATED PRODUCTS CO., INC., 13-16 Park Row, New York, N. Y.

FOR SALE: 1 BIRMINGHAM 84-INCH 3-ROLL STOCK CALENDER with drive and 125 h.p. D.C. motor. Address Box No. 256, care of INDIA RUBBER WORLD.

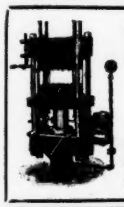
5 SINGLE AND 1 DOUBLE CAVITY VERTICAL AKRON STANDard watch-case inner tube vulcanizers with about 25 extra cavities. Price cheap for quick sale. The Schavoir Rubber Co., Stamford, Conn.

MACHINERY AND SUPPLIES WANTED

WANTED: 1 USED OR SECOND HAND WASHER CUTTER, Black Rock or similar. Address Box No. 257, care of INDIA RUBBER WORLD.

CALENDER SHELLS
ANY DIAMETER, ANY LENGTH
The W. F. Gammeter Co., Cadiz, Ohio

New and Used
RUBBER MACHINERY
M. Norton & Co.
Medford, Mass.



PLASTICS MOLDING PRESSES
Plain or Semi-automatic—Any Size or pressure—Pumps, Valves, etc.
Dunning & Boschert Press Co., Inc.
336 W. WATER ST. SYRACUSE, N. Y.

BALATA GOLF BALL COVERS
And Sheet Stock

Manufactured from a fine grade of Balata—Properly compounded and deresinated. We guarantee satisfaction to all buyers.

GOULD GOLF BALL CO., Inc., Wakefield, Mass.

INTERNATIONAL PULP CO.
41 Park Row, NEW YORK, N. Y.
SOLE PRODUCERS
ASBESTINE
REG. U. S. PAT. OFF.

***Genasco* Hydrocarbon**
(SOLID OR GRANULATED)

A hard, stable compound—produced under the exacting supervision of an experienced and up-to-date laboratory.

Aging tests have proved Genasco to be *always* of uniform quality. Shipped to all parts of the world in metal drums. Stocks carried at Maurer, N. J. and Madison, Ill.

THE BARBER ASPHALT COMPANY
Philadelphia New York Chicago St. Louis

BAIRD
RUBBER & TRADING CO., Inc.

CRUDE RUBBER
AND
LIQUID LATEX

233 Broadway *New York*

BROCKTON TOOL COMPANY

103 BELMONT STREET **QUALITY HEEL MOULDS** BROCKTON, MASS.

MOULDS FOR PLAIN AND SPORT SOLES—MECHANICAL GOODS AND SPECIALTIES

United States Statistics

Imports of Crude and Manufactured Rubber

	May, 1933		Five Months Ended May, 1933	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	58,243,468	$1,694,963	283,596,894	$8,622,193
Liquid latex	1,644,296	71,008	7,334,190	354,425
Jelutong or pontianak	1,036,381	55,660	4,163,296	231,535
Balata	78,321	9,869	297,177	34,624
Gutta percha	235,094	12,784	525,650	32,062
Siak, scrap, and reclaimed	462,598	2,090	1,514,828	8,013
Totals	61,700,158	$1,846,374	297,432,035	$9,282,852
Chicle, crude *Free*	105,780	$17,379	1,786,241	$460,322
MANUFACTURED—*Dutiable*				
Rubber soled footwear with fabric uppers *pairs*	152,897	$41,615	3,575,510	$535,998
Rubber toys	.....	72,907	.....	206,599
Druggists' sundries, n. e. s.	.....	1,919	.....	22,649
Combs, hard rubber *number*	275,312	8,259	2,022,036	59,028
Golf balls *number*	80,040	16,311	448,964	91,098
Tennis and other rubber balls *number*	162,248	12,365	1,211,855	53,161
Tires *number*	3,215	22,197	20,198	101,399
Other rubber manufactures	.....	40,945	.....	171,136
Totals	.....	$216,518	.....	$1,241,068

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	4,125,996	$189,451	14,612,360	$562,821
Balata	16,218	2,099	89,623	14,232
Guayule	.....	.....	3,400	408
Gutta percha, rubber substitutes, and scrap	50	31	7,309	1,147
Rubber manufactures	.....	1,185	.....	4,304
Totals	.....	$192,766	.....	$582,912

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed	713,724	$25,191	2,562,962	$90,862
Scrap	4,921,721	58,447	19,737,594	256,831
Rubberized automobile cloth, *sq. yd.*	47,813	18,621	227,525	94,822
Other rubberized piece goods and hospital sheeting *sq. yd.*	72,182	22,152	255,208	85,227
Footwear				
Boots *pairs*	3,005	6,825	18,349	37,940
Shoes *pairs*	14,742	4,927	53,702	21,414
Canvas shoes with rubber soles *pairs*	25,240	12,885	117,566	67,590
Soles *doz. pairs*	799	1,718	4,470	9,843
Heels *doz. pairs*	22,433	10,060	125,296	65,480
Water bottles and fountain syringes *number*	10,894	3,812	66,305	22,965
Gloves *doz. pairs*	5,808	11,418	27,357	53,476
Other druggists' sundries	.....	21,625	.....	116,093
Balloons *gross*	14,188	12,037	73,132	65,007
Toys and balls	.....	3,080	.....	9,859
Bathing caps *doz.*	7,572	12,271	36,263	58,025
Bands	27,118	7,075	108,507	29,204
Erasers	40,035	22,157	122,624	67,833
Hard rubber goods				
Electrical goods	137,705	14,000	427,236	41,651
Other goods	.....	6,381	.....	51,382
Tires				
Truck and bus casings, *number*	12,366	197,497	53,170	829,495
Other automobile casings, *number*	57,169	361,643	299,151	1,994,918
Tubes, auto *number*	44,709	42,991	204,847	204,124
Other casings and tubes, *number*	1,284	3,734	8,768	19,029
Solid tires for automobiles and motor trucks *number*	458	15,048	2,571	69,381
Other solid tires	16,430	3,166	341,551	38,543
Tire sundries and repair materials	.....	30,061	.....	138,076
Rubber and friction tape	54,665	11,120	217,682	46,127
Belting	121,239	51,158	648,813	280,673
Hose	249,140	63,763	1,059,070	265,088
Packing	85,354	33,944	399,613	150,077
Thread	119,123	65,616	588,781	313,017
Other rubber manufactures	.....	95,911	.....	348,262
Totals	.....	$1,250,334	.....	$5,942,314

Imports by Customs Districts

	June, 1933 *Crude Rubber		June, 1932 *Crude Rubber	
	Pounds	Value	Pounds	Value
Massachusetts	8,959,488	$322,388	2,644,906	$95,146
New York	40,023,610	1,419,533	69,623,589	2,075,240
Philadelphia	1,367,975	42,258	767,200	23,014
Maryland	1,319,797	37,707	6,156,548	168,047
New Orleans	179,200	4,576	.....	.....
Los Angeles	719,294	17,590	11,639,667	272,409
San Francisco	58,000	2,150	1,269,614	42,029
Oregon	22,400	1,120	.....	.....
Totals	52,649,764	$1,847,322	92,101,524	$2,675,885

*Crude rubber including latex dry rubber content.

Rubber Goods Production Statistics

		1933	1932
TIRES AND TUBES		May	May
Pneumatic casings			
Production	*thousands*	4,151	3,056
Shipments, total	*thousands*	4,144	3,406
Domestic	*thousands*	4,077	3,325
Stocks, end of month	*thousands*	5,408	7,503
Solid and cushion tires			
Production	*thousands*	9	8
Shipments, total	*thousands*	9	8
Domestic	*thousands*	9	8
Stocks, end of month	*thousands*	21	35
Inner tubes			
Production	*thousands*	3,760	2,727
Shipments, total	*thousands*	3,571	3,094
Domestic	*thousands*	3,530	3,035
Stocks, end of month	*thousands*	5,105	7,131
Raw material consumed			
Fabrics	*thous. of lbs.*	16,778	12,045
MISCELLANEOUS PRODUCTS			
Rubber bands, shipments	*thous. of lbs.*	247	187
Rubber clothing, calendered			
Orders, net	*no. of coats and sundries*	9,808	12,503
Production	*no. of coats and sundries*	19,392	12,886
Rubber-proofed fabrics, production, total	*thous. of yds.*	....	1,748
Auto fabrics	*thous. of yds.*	467	197
Raincoat fabrics	*thous. of yds.*	....	556
Rubber flooring, shipments	*thous. of sq. ft.*	365	399
Rubber and canvas footwear			
Production, total	*thous. of pairs*	3,860	4,518
Tennis	*thous. of pairs*	2,794	3,485
Waterproof	*thous. of pairs*	1,066	1,033
Shipments, total	*thous. of pairs*	4,212	5,049
Tennis	*thous. of pairs*	3,516	4,603
Waterproof	*thous. of pairs*	696	446
Shipments, domestic, total	*thous. of pairs*	4,149	4,966
Tennis	*thous. of pairs*	3,470	4,530
Waterproof	*thous. of pairs*	679	436
Stocks, total, end of month	*thous. of pairs*	14,110	17,879
Tennis	*thous. of pairs*	5,413	6,163
Waterproof	*thous. of pairs*	8,697	11,716
Rubber heels			
Production	*thous. of pairs*	19,427	10,259
Shipments, total	*thous. of pairs*	20,484	10,270
Export	*thous. of pairs*	182	275
Repair trade	*thous. of pairs*	6,883	3,651
Shoe manufacturers	*thous. of pairs*	13,419	6,345
Stocks, end of month	*thous. of pairs*	22,688	28,782
Rubber soles			
Production	*thous. of pairs*	5,209	2,488
Shipments, total	*thous. of pairs*	5,482	2,703
Export	*thous. of pairs*	1	4
Repair trade	*thous. of pairs*	335	151
Shoe manufacturers	*thous. of pairs*	5,146	2,549
Stocks, end of month	*thous. of pairs*	3,006	2,434
Mechanical rubber goods, shipments			
Total	*thous. of dollars*	2,847	2,542
Belting	*thous. of dollars*	521	420
Hose	*thous. of dollars*	1,067	1,131
Other	*thous. of dollars*	1,259	991

Source: *Survey of Current Business,* Bureau of Foreign & Domestic Commerce, Washington, D. C.

World Rubber Shipments—Net Exports

	Long Tons—1933			
British Malaya	Apr.	May	June	July
Gross exports	36,752	42,902	41,411	51,958
Imports	7,758	13,664	16,538	18,772
Net	28,994	29,238	24,873	33,186
Ceylon	4,582	4,643	5,198	4,551
India and Burma	272	475	377	....
Sarawak	624	1,091	1,149	1,358
British N. Borneo	*400	*400	*400	*400
Siam	235	359	632	797
Java and Madura	5,226	6,782	7,352	....
Sumatra E. Coast	5,969	7,298	6,654	....
Other N. E. Indies	7,934	5,728	5,874	....
French Indo-China	*1,053	*1,436	1,125	1,301
Amazon Valley	556	....	....	....
Africa	*100	*100	*100	*100
Totals	55,945	....	....	....

* Estimate. *Compiled by Rubber Division, Washington, D. C.*

London Stocks, June, 1933

			Stocks, June 30		
LONDON	Landed Tons	Delivered Tons	1933 Tons	1932 Tons	1931 Tons
Plantation	5,214	4,179	42,979	50,965	83,000
Other grades	6	7	53	44	34
LIVERPOOL					
Plantation	*4,810	*1,931	*59,419	*58,500	*53,975
Total tons, London and Liverpool	10,030	6,117	102,451	109,509	137,009

*Official returns from the recognized public warehouses.

"DURO" BRAND

GUAYULE RUBBER

Washed and dry, ready for Compounding. Invaluable in conjunction with Plantation Rubbers and Reclaims as an aid in Compounding. Especially useful in all Friction Stocks.

CONTINENTAL RUBBER COMPANY OF NEW YORK

745 Fifth Avenue New York

LIQUID LATEX

NORMAL and CONCENTRATED

Agents in U. S. A. for Dunlop Concentrated 60% Latex, Product of Dunlop Plantations, Ltd.

CHARLES T. WILSON CO., INC.

99 WALL STREET NEW YORK, N. Y.

GUIGNET'S GREEN

(Chromium Hydroxide)

The Brightest of the Permanent Green Pigments

Write for samples

C. K. WILLIAMS & CO.
Easton, Pa.

GEO. S. MEPHAM & CO.
East St. Louis, Ill.

The
GENERAL
TIRE

— goes a long way to make friends

BUILT IN AKRON, OHIO, BY THE GENERAL TIRE & RUBBER CO.

COTTON FLOCKS

QUALITY COUNTS

Our best customers are the leaders in the rubber industry.

They Know Quality!

LIBERAL WORKING SAMPLES SUPPLIED

CLAREMONT WASTE MFG. CO.
DEPT. IR CLAREMONT, N.H. U.S.A.

FOR MANUFACTURERS OF HEELS, SOLES, TILING AND OTHER MECHANICAL RUBBER GOODS

JOHNSON SUPER PRODUCTION TUBER

Tremendous reductions in insulating costs can but result from the use of the machine, for its characteristics insure speed, uniformity, and quality.

Write for bulletins and other information

NEW ENGLAND BUTT CO.

Sole manufacturers under Johnson Patents up to and including 3¾" worm.

PROVIDENCE, R. I. CHICAGO, ILL.
U. S. A.

RUBBER FACTICE OF HIGHEST QUALITY — THE STAMFORD FACTICE — STAMFORD CONN — THE STAMFORD RUBBER SUPPLY CO.

FACTICE GIVES *That Velvet Feel to Rubber*

The STAMFORD RUBBER SUPPLY COMPANY
STAMFORD, CONN.

Rubber Equipment Manufacturers & Engineers

MIXING AND MOLDING EQUIPMENT
FOR BAKELITE, PLASTICS, ETC.
STEEL & IRON FOUNDRIES
PATTERN & FORGE SHOPS
MACHINE SHOP

THE ADAMSON MACHINE CO.
AKRON, OHIO

We have served the Rubber Industry for 39 years

THE H. O. CANFIELD CO.

MANUFACTURE

Molded Specialties, Plumbers' Rubber Goods, Valves, Gaskets, Hose Washers, and Cut Washers of all kinds

Write for prices and samples

Offices and Works - Bridgeport, Conn.

TRADE MARK

TYSON BROS., INC.

WOODBRIDGE, N. J.

MANUFACTURERS
of
Molded Rubber Goods

Auto Repair Stocks and Cements
Milling and Calendering for the Trade.

UNIQUE REENFORCER
COLLOIDAL WHITING
for
COMING RUBBER INDUSTRY

HAKUENKA

Test sample upon request

SHIRAISHI KOGYO KAISHA, LTD.
TOKYO and OSAKA, JAPAN

FINELY PULVERIZED—BRILLIANT

COLORS
STEAM-PRESS

Chicago Representative FRED L. BROOKE 228 N. La Salle St.
Pacific Coast Representative MARSHALL DILL San Francisco
Cleveland FRED H. PALMER, JR., 750 Prospect Ave.

Manufactured by
BROOKLYN COLOR WORKS, INC.
129-143 Cherry Street Brooklyn, N. Y.

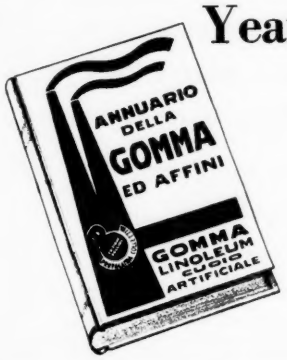
ACME

Stands for the best in quality and workmanship

It implies progress and constant striving after improvement

It fully describes the product of

The Acme Rubber Mfg. Company, Trenton, N. J.



Year Book of the Italian Rubber Industry

1933 EDITION

The most complete and up-to-date guide for the export manufacturer. The best medium for getting in touch with the Italian rubber manufacturers and buyers.

1933 edition now in the course of preparation

Write for advertising rates to the publishers:

CASA EDITRICE POLLINI

Via Torino, 47 MILANO (Italy) Tel. 82-948

Are You a Reader of the

"INDIA-RUBBER JOURNAL"?

The "India-Rubber Journal" is interested in all new applications for rubber and all technical developments in the Industry—send news of anything you are doing in this direction.

The "India-Rubber Journal" also particularly seeks articles and short notes from American Technologists and practical men regarding new lines of manufacture or anything fresh in general rubber practice.

The subscription rate is 20/—per annum, post free, for 53 issues, commencing at any date. Please remit by Bank Draft payable in England.

37 & 38, Shoe Lane, London, E. C. 4, England

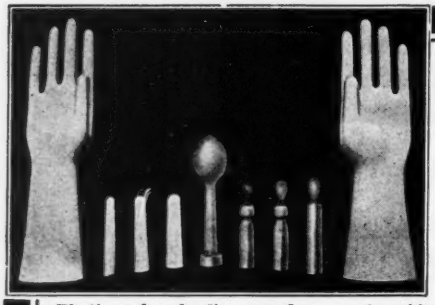
The CARTER BELL MFG CO

CARTER BELL

STANDARD SINCE 1903

RUBBER SUBSTITUTES

150 Nassau St New York

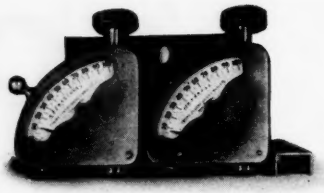


There's Satisfaction in Making a Thing Right!

That's why leading producers of rubber dipped goods demand the craze-proof vitrified porcelain forms of the largest, exclusive manufacturer—SEVILLE PORCELAIN CO., Seville, Ohio.

Write today for quotations. There is a substantial difference in the quality.

NRA WE DO OUR PART



HARDNESS and ELASTICITY

Tests of Rubber

are made regularly with the Durometer and Elastometer. No rubber man should be without them. They are used as Pocket Instruments or adjustable to bench stands, and will make thousands of tests per day.

Write for descriptive pamphlet R-4 on our LATEST IMPROVED INSTRUMENTS.

THE SHORE INSTRUMENT & MFG. CO.

VAN WYCK AVENUE AND CARLL ST., JAMAICA, NEW YORK

Agents for Great Britain, Coats Machine Tool Co., Ltd., London. For Germany, Italy and Spain, Alfred H. Schutte, Köln-Deutz, etc.

ESTABLISHED 1883

EASTHAMPTON RUBBER THREAD CO.

EASTHAMPTON, MASS.

Original Makers of **RUBBER THREAD** in America
Also Makers of **RUBBER BANDS**

Both THREAD and BANDS are made only of the best UPRIVER FINE PARA RUBBER

DAVIDSON RUBBER COMPANY

Boston, Mass., U. S. A.

Makers of Finest Quality Rubber Goods Since 1857

Druggists' Sundries
Bathing Caps and Shoes
Sponge Rubber

Cable Address: Nosdivad, Western Union Code

Quality Guaranteed

MOLDED RUBBER GOODS
DRUGGISTS' SUNDRIES
GLASSWARE

Whitall Tatum Company

FACTORIES

RUBBER WORKS, KEYPORT, NEW JERSEY
GLASS WORKS, SOUTH MILLVILLE, N. J. MILLVILLE, N. J.

OFFICES

NEW YORK, BOSTON, PHILADELPHIA, CHICAGO, BUENOS AIRES, A. R., SAN FRANCISCO, SYDNEY, N. S. W.

THE POCONO CO.

Manufacturers of

SUEDE FINISH FABRICS

AND

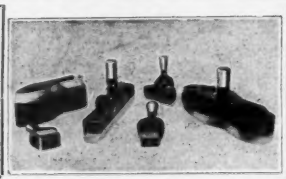
AUTOMOBILE TOP FABRICS

POCO-DECK — POCOTOP

Office and Factory — Trenton, New Jersey

Bring On Your Tough Cutting Die Problems!

Put them up to experts. We specialize in dies for all kinds and types of cutting. If it can be done with a cutting die, we will show you how



to do it. Particular buyers for largest manufacturers rely on the experience of Fremont engineers, selecting Fremont Dependable Dies.

FREMONT TOOL & DIE CO.

432-38 North Wood St., Fremont, Ohio

Rand

GUARANTEED RUBBER GOODS

Dress Shields
Rubber Sheetings
Bunny Baby Pants
Sanitary Requisites
Guimpes & Brassieres
Randprint Aprons
All Styles Rubber Aprons
Pure Rubber Sheets
Rubber Bibs
Crib Sheets
Bathing Caps
Rubber Specialties
Powder Puff Pockets
Randprint Rubber

Sheet Gum cut to pattern for manufacturers

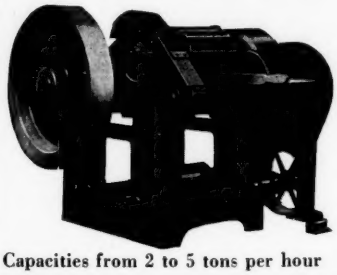
"They Last Longer"

RAND RUBBER CO., Inc.
BROOKLYN, N. Y., U. S. A.

GIANT CUTTERS

CUT RUBBER SCRAP "CLEANER AND BETTER"

Write for descriptive literature today



TAYLOR, STILES & COMPANY
GIANT
REG. U.S. PAT. OFF.
RIEGELSVILLE, N.J. U.S.A.

TAYLOR, STILES & COMPANY
Riegelsville, N. J.

Capacities from 2 to 5 tons per hour

SOLE AGENT FOR EUROPE:
R. J. Marx, 133 Finsbury Pavement, London, E. C., Eng.

Announcing

No. 106 Rubber Lacquer for Flexible Rubber and Leatherette Will not crack or peel

The Monroe Sander Corporation

10-18 46th Avenue
Long Island City
New York

Cable Address: Monrosand, New York.
European Agents: The Wayne V. Myers Company, Ltd., 57-58 Dolben St., Blackfriars Road, London, S. E. 1.

MECHANICAL FABRIC CO.

PROVIDENCE, R. I.

Manufacturers of

India Rubber Thread

for Weaving and other uses

Card Cloths

of Woolen, Cotton and Rubber

Rubber Coated Cloths

Vulcanized or Unvulcanized for various purposes

CORRESPONDENCE SOLICITED

ARCHER RUBBER CO.

Manufacturers

Royal Archer Lines

Rubber Covered Rolls for Paper, Textile, and Printing Trades
Piano and Organ Cloths — Rubber Tubings
Hospital Sheetings and Blankets
Pure Gum Rubber Aprons, Baby Pants and Crib Sheetings
Rubber Surface Clothing — Aprons, Ponchos, Rubber Fabrics

RUBBERIZING FOR THE TRADE

Factory and Main Office, MILFORD, MASS.
New York Office—60 E. 42nd Street, New York City

FOR VALUE RECEIVED

68 per cent of advertisers in

INDIA RUBBER WORLD

have been using space regularly for over 5 years—or before 1929—in good times and bad. 25 per cent have been with us for over **20 years.**
The Answer is Steady Results—Not Sensational but Consistent and Profitable.

Published On the First of Each Month by Bill Brothers Publishing Corp.

420 Lexington Ave., New York, N. Y.
Cable Address: Elbill, New York

Subscription $3.00 Per Year Postpaid in the United States
$4.10 Per Year Postpaid to Canada
$3.50 Per Year Postpaid to All Other Countries
Single Copies 35 cents

RUBBERIZED FABRICS OF OUTSTANDING QUALITY FOR EVERY PURPOSE

Aldan Rubber Co

HARRY M. DANNENBAUM, Pres.
MAIN OFFICE 1011-27 WOOD ST., PHILADELPHIA
NEW YORK 111 Fifth Ave.
CHICAGO 327 So. LaSalle St.

MECHANICAL MOLDED RUBBER GOODS

We Solicit Your Inquiries

THE BARR RUBBER PRODUCTS COMPANY
SANDUSKY, OHIO

Druggists' Sundries—Surgical Rubber Goods
Elastic Bands—Tubing—Bladders
Rubber Footwear—Rubber Roll Covering
Hand Made and Molded Specialties

TYER RUBBER COMPANY

Main Street — Andover, Mass., U. S. A.

SERICITE

MOULD LUBRICANT

Pat. No. 1591767

Sole Licensed Sellers

WHITTAKER, CLARK & DANIELS, INC.

245 Front St., New York City

INDEX TO ADVERTISERS

This index is maintained for the convenience of our readers. It is not a part of the advertiser's contract, and INDIA RUBBER WORLD *assumes no responsibility to advertisers for its correctness.*

Page

A

Acme Rubber Manufacturing Co. 79
Adamson Machine Co., The 78
Akron Equipment Co., The 10
Akron Standard Mold Co.. 23
Aldan Rubber Co. 81
American Cyanamid & Chemical Corp. 15
Anaconda Zinc Oxide Dept. of I. L. R. Co..... 13
Archer Rubber Co. 81

B

Baird Rubber & Trading Co., Inc. 75
Barber Asphalt Co., The... 75
Barco Manufacturing Co... —
Barr Rubber Products Co., The 81
Binney & Smith Co. 64
Black Rock Manufacturing Co. 24
Bristol Co., The ..... —
Brockton Tool Co., The.... 75
Brooklyn Color Works, Inc. 78

C

Cabot, Godfrey L., Inc., Front Cover
Cambridge Instrument Co., Inc. 16
Cameron Machine Co. .... —
Canfield, H. O., Co., The.. 78
Carter Bell Mfg. Co..... 79
Claremont Waste Mfg. Co. 78
Cleveland Liner & Mfg. Co., The .....Back Cover
Colonial Insulator Co., The 18
Continental Rubber Co. of N. Y. 77
Curran & Barry 71

D

Davidson Rubber Co..... 80
Dunning & Boschert Press Co., Inc. 75
du Pont, E. I., de Nemours & Co., Inc. 25

Page

E

Easthampton Rubber Thread Co. 80
Emerson Apparatus Co., .. —

F

Farrel-Birmingham Co., Inc. 8
Firestone Tire & Rubber Co. .....Insert, 19-22
Fremont Tool & Die Co... 80

G

Gammeter, W. F., Co., The 75
General Tire & Rubber Co., The 77
Givaudan-Delawanna, Inc.. 71
Gould Golf Ball Co., Inc... 75
Gummi-Zeitung 14
Gurman, I. T. 73

H

Hentz, H. & Co., Inside Back Cover
Heveatex Corp. 75
Home Rubber Co. 14
Hotel Adelphia ..... —
Huber, J. M., Inc. 26

I

Impervious Varnish Co., Inc. 18
India-Rubber Journal 79
Institution of the Rubber Industry 4
International Pulp Co..... 75

J

Jacoby, Ernest 75
Jenkins Brothers 24

K

Kautschuk 6

L

La Goma ..... —
Lane, J. H., & Co..... 68
Le Caoutchouc & La Gutta Percha 12

Page

M

Mechanical Fabric Co. 81
Moll Mfg. Co. 4
Moore & Munger 24
Morris, T. W. ..... —

N

Naugatuck Chemical Co., The 5
New England Butt Co. ... 78
New Jersey Zinc Co., The 9
Norton, M., & Co. 75

P

Pennsylvania Rubber Co. of America, Inc. 18
Pequanoc Rubber Co. Inside Front Cover
Philadelphia Rubber Works Co. ..... —
Pocono Co., The 80
Polk, R. L., & Co. 56

R

Rand Rubber Co., Inc. 80
Randall, Frank E. 68
Rare Metal Products Co. .. 68
Revertex Corporation of America ..... —
Revue Générale du Caoutchouc 10
Robertson, John, Co., Inc.. 16
Roca & Guix 24
Royle, John, & Sons..... 6

S

St. Joseph Lead Co..... —
Sander, Monroe, Corp., The 81
Seville Porcelain Co..... 80
Shiraishi Kogyo Kaisha, Ltd. 78
Shore Instrument & Mfg. Co. 80
Societe de Recherches et d'Exploitations Petroliferes ..... —

Page

Southwark Mfg. Co., Inside Back Cover
Stamford Rubber Supply Co. 78
Stokes, Jos., Rubber Co... 12

T

Taylor, Stiles & Co..... 81
Thropp, William R., & Sons Co. 11
Titanium Pigment Co., Inc., 7
Turner, Halsey Co..... 68
Tyer Rubber Co..... 81
Tyson Bros., Inc. 78

U

Union Talc Co. ..... —
United Carbon Co. 3
United Rubber Machinery Exchange 73
United Shoe Machinery Corporation 17
Utility Manufacturing Co.. 16

V

Vanderbilt, R. T., Co., Inc. 28
Van Leer's United Factories Ltd. 23
Vultex Corp. of America.. 17

W

Wade, Levi C. ..... —
Wanted and For Sale....73, 75
Weber, Hermann ..... —
Wellman Co., The 16
Western Rubber Co. 18
Whitall, Tatum Co. 80
Whittaker, Clark & Daniels, Inc. 81
Williams, C. K., & Co.... 77
Wilson, Charles T., Co., Inc. 77
Wishnick-Tumpeer, Inc. .. 67

Y

Year Book of the Italian Rubber Industry 79